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Occupational Projections and Training Data

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Occupational Projections and Training Data

1996 Edition

Statistical and Research Supplement
to the 1996-97 Occupational Outlook Handbook

U.S. Department of Labor
Robert B. Reich, Secretary

Bureau of Labor Statistics
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Preface

This statistical and research supplement to the 1996-97 *Occupational Outlook Handbook* presents the detailed, comprehensive statistics used in preparing the *Handbook.* It also discusses recent research results and other topics—information that should be valuable to training officials, education planners, vocational and employment counselors, job seekers, and others interested in occupational information. Each topic is addressed in a separate chapter. This edition of the supplement is the 13th in a series dating back to 1971.

Chapter I reports the results of efforts to develop new occupational educational and training categories. With 11 new categories available, greater detail of the manner in which most workers become proficient is possible. A category was assigned to each occupation in the 1994 national industry-occupation matrix. Definitions of the categories are provided and the occupations included in each are identified.

Chapter II presents detailed information about all occupations in the industry-occupation matrix. In addition to statistics on employment and employment changes, growth rates, job openings, and self-employed workers, table 2 includes rankings from very low to very high for a variety of variables, and also identifies the new education and training category designated for each occupation. This table provides the user with a comprehensive picture of a specific occupation and makes it easier to compare the attributes of different occupations. The data used in preparing table 2 are available electronically for those desiring different tables or analyses of its contents.

Data from the National Center for Education Statistics on completions of institutional education and training programs by field of study appear in chapter III. Finally, chapter IV provides information about replacement needs. It defines what the data represent and describes how they were prepared. Projected replacement rates and estimates of replacement needs for 1994-2005 also are presented.

In all cases, national data are provided. Data for States and local areas may be obtained from sources identified in the appendix.

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Chapter I. New Education and Training Categories

Occupational education and training information is a primary focus of all editions of this publication. The information presented evolved, however, as efforts to describe the impact of education and training programs on job opportunities and earnings increased. Initially, the Bureau prepared and presented descriptive information for selected individual occupations; the information now, however, is designed to fit within a comprehensive system that permits examination of the labor market as a whole. This chapter describes the new education and training categories recently adopted by the BLS Occupational Outlook Program—it discusses why they were needed and how they were developed, presents their definitions, and illustrates how they can be used.[1]

Background

For many years, statistics showing the number of years of school completed by individuals in a particular occupation have been used to describe the educational attainment of the American work force. Analyses based on these data from the Decennial Census of Population and the Current Population Survey (CPS) generally have presented information on individuals having completed less than 4 years of high school, 4 years of high school, 1 to 3 years of college, or 4 years or more of college. Information is not available on the number of individuals in an occupation who had received a bachelor's or other type of degree. That information had to be inferred from the number of years of school completed. This weakness in the data is even more pronounced for occupations in which many individuals had completed 2 years of college, because it is impossible to know whether they had an associate's degree or had dropped out of a bachelor's degree program.

Although these data are best used to describe the educational attainment of the population, tabulations showing the distribution of workers in an occupation by years of school completed are also used to describe the educational requirements of occupations. The *Occupational Outlook Handbook* uses these data along with other information about the usual education requirements for specific occupations. The *Handbook* also points out that individuals can qualify for jobs in many occupations in more than one way, although generally one way is predominant or preferred. And the *Handbook* includes discussions of apprenticeship and other types of employer-related training. However, the qualitative information provided in the *Handbook* is not suitable for presentation in a format in which all occupations can easily be compared.

The 1994 edition of *Occupational Projections and Training Data* provides a more systematic presentation of this information. This edition classifies occupations into four categories in terms of the most significant way in which individuals qualify for jobs:

1. Occupations for which training in a bachelor's degree or higher program is most significant;
2. Occupations for which some postsecondary training is most significant;
3. Occupations for which work-related training is most significant; and
4. Occupations for which work-related or postsecondary training is generally not significant.

As analysts used this information, however, several weaknesses of the classification became apparent. In the category "bachelor's degree or higher," some occupations require a first professional degree, some require a doctoral degree, and some require a master's degree. The category "some postsecondary training" included both registered nurses and licensed practical nurses, who have distinctly different education and training requirements. The category "significant work-related training" included electricians, who require extensive on-the-job training, as well as bank tellers, who require much less training. Perhaps the greatest weakness was the category covering occupations for which work-related or postsecondary training was not significant. This category covered half of all workers employed when the information was developed and did not distinguish among occupations requiring different amounts of informal on-the-job training and experience.

Improving the system

In an attempt to improve the classification, the Bureau conducted an extensive analysis of the education and training requirements of all the occupations covered in the *Occupational Outlook Handbook*. New data helped make this analysis possible; in 1992, the CPS included an additional question which asked individuals to report the highest level degree or diploma they had received.

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[1] Pat Wash, an economist in the Office of Employment Projections, prepared the introductory material and training category definitions that also appear in the article "A New Way to Classify Occupations by Education and Training" in the *Occupational Outlook Quarterly*, Winter 1995-96 edition.

The analysis revealed that formal educational requirements for some occupations are very straightforward. For example, physicians must have an M.D., and cosmetologists must complete a training program in cosmetology. For these occupations and others, a specified training program must be completed in order to get a license to practice. For some other occupations, such as economist or psychologist, the analysis indicated a greater variation in educational requirements because some jobs in the occupation require a bachelor's degree, while others require a master's degree, and still others require a doctoral degree. Other occupations were identified in which work experience in another occupation was nearly always required for entry; sometimes the prerequisite occupation required a bachelor's or higher degree, and other times it did not.

It also became clear that institutional educational attainment was not the best way to describe the education and training requirements for most jobs. For example, classifying an occupation as requiring less than a high school education is misleading. Although many workers without a high school diploma get jobs, clearly the requirement is not that they fail to graduate from high school.

The analysis showed that too few categories had been used to classify education and training requirements for occupations. To correct this, the Bureau developed the following principles for use in revising the classification system.

1. An occupation would be placed in the category that reflects the manner in which most workers become proficient in that occupation.
2. Postsecondary institutional education requirements leading to degrees and certificates would be used to classify occupations in which completion of that program is the most common way of entering the occupation, even though additional on-the-job experience is usually needed to become proficient in the occupation.
3. The length of time it generally takes an average worker to achieve proficiency through a combination of on-the-job training and experience would be used to classify occupations in which postsecondary training is generally not needed for entry.

The Bureau developed separate categories for occupations in which apprenticeship is the usual method of entry and for occupations in which inherent skills are very important, such as for professional athletes, musicians, and other performers. Despite differences in the way apprentices and sports performers and entertainers receive their training, the analysis demonstrated that no institutional education or training is required for these occupations and that it takes significantly longer than 1 year of training and experience to achieve average performance. Therefore, such occupations were judged to be very similar to those requiring long-term on-the-job training and were placed in that category.

The result of the analysis identified 11 categories of education, training, and experience:

- First professional degree (e.g., M.D., J.D.)
- Doctoral degree
- Master's degree
- Work experience plus a bachelor's or higher degree
- Bachelor's degree
- Associate's degree
- Postsecondary vocational training
- Work experience in a related occupation
- Long-term on-the-job training
- Moderate length on-the-job training
- Short-term on-the-job training.

The new system

After the training categories were established, BLS economists identified the category most significant for each occupation.. The analysis of training included all 513 occupations in the national industry-occupation matrix for which employment projections are developed by BLS, not just the 250 occupations covered in the *Handbook*.

The task proved difficult for several reasons, but principally because for most occupations there is more than one way to qualify for a job. For example, registered nurses may obtain their training in bachelor's degree or hospital diploma programs, although most are trained in associate's degree programs. The challenge was to determine the training category that best reflects the typical conditions in the occupation and the preferences of most employers.

Another problem resulted from the diverse jobs that are grouped in the miscellaneous occupational categories or residual occupations in the industry-occupation matrix. For example, the occupation "all other teachers and instructors" comprises graduate assistants, instructional coordinators, lecturers, nursing instructors, and all other teachers and instructors. It was difficult to assign this occupation to a single category because the individual jobs have different characteristics. For example, graduate assistants include some workers with a bachelor's degree who are working towards a master's degree and others with a master's degree who are working on a doctorate. Similarly, lecturers could have either a master's degree or a doctoral degree. Most nursing instructors have a master's degree, although others have degrees ranging from the associate to the doctorate. The occupation was finally placed in the "master's degree" category. This reflects the judgment that most graduate assistants probably have a master's degree and are working on their doctorate and the majority of lecturers and nursing instructors also have a master's degree.

The education and training categories are defined below and some of the occupations in each are mentioned. In addition, the total number of occupations and the total 1994 employment in each category are given. Table 1 lists all 513 occupations by category; within each category, the occupations are alphabetical.

Occupations that require a first professional degree. The first professional degree is the minimum preparation required for entry into several professions, including law, medicine, dentistry, and the clergy. Completion of this academic program usually requires at least 2 years of full-time academic study beyond a bachelor's degree. There is no ambiguity about the training requirements for these occupations. Only 8 of the 513 occupations examined, accounting for 1.7 million workers, require this level of education.

Occupations that generally require a doctoral degree. The doctoral degree can also be easily related to specific occupations. It usually requires at least 3 years of full-time academic work beyond the bachelor's degree. Completion of this program is required for entry into 6 occupations in academia and the physical, biological, and social sciences; these occupations employed 1 million people.

Occupations that generally require a master's degree. Completion of a master's degree program usually requires 1 or 2 years of full-time study beyond the bachelor's degree. The master's degree is the usual training requirement for 10 occupations that employed 1.4 million workers, such as management analyst, urban planner, and librarian.

Occupations that generally require work experience in an occupation requiring a bachelor's or higher degree. Most occupations in this category are managerial occupations that require experience in a related nonmanagerial occupation. Jobs in these occupations generally are filled with experienced staff who are promoted into a managerial position, such as engineers who advance to engineering manager. It is very difficult to become a judge without first working as a lawyer, or to become a personnel, training, or labor relations manager without first gaining experience as a specialist in one of these fields. Fourteen large occupations, which accounted for 8.1 million workers, generally require this type of preparation.

Occupations that generally require a bachelor's degree. This is a degree program requiring at least 4 but not more than 5 years of full-time academic work after high school. The bachelor's degree is considered the minimum training requirement for most professional occupations, such as mechanical engineer, pharmacist, recreational therapist, and landscape architect. For 64 occupations employing 13.9 million workers, this is the most significant source of training.

Occupations that generally require an associate's degree. Completion of this degree program usually requires at least 2 years of full-time academic work after high school. Most occupations in this training category are health related, such as registered nurse, respiratory therapist, and radiologic technologist. Also included are science and mathematics technicians and paralegals. In all, there are 16 relatively large occupations employing 4 million workers that usually require an associate's degree.

Occupations that generally require completion of vocational training provided in postsecondary vocational schools. Workers in 29 occupations with employment of 7.2 million generally qualify for jobs by completing vocational training programs or by taking job-related college courses that do not result in a degree. Some programs take less than a year to complete and lead to a certificate or diploma. Others last longer than a year but less than 4 years. Occupations in this category include some that only require completion of the training program, such as travel agent, and those in which people who complete the program must pass a licensing exam before they can go to work, such as barber and cosmetologist.

Occupations that generally require skills developed through work experience in a related occupation. About 9.9 million workers were in jobs that require skills and experience gained in another occupation. This category also includes occupations in which skills may be developed from hobbies or other activities besides current or past employment or from service in the Armed Forces. There are 39 occupations in this category. Among them are cost estimators, who generally need prior work experience in one of the construction trades; police detectives, who are selected based on their experience as police patrol officers; and lawn service managers, who may be hired based on their experience as groundskeepers.

Long-term on-the-job training. This category includes occupations that generally require more than 12 months of on-the-job training or combined work experience and formal classroom instruction before workers develop the skills needed for average job performance. This category includes occupations such as electrician, bricklayer, and machinist that generally require formal or informal apprenticeships lasting up to 4 years. Also included in this type of training are intensive occupation-specific employer-sponsored programs that workers must successfully complete before they can begin work. These include the fire and police academies and schools for air traffic controllers and flight attendants. In other occupations—insurance sales and securities sales, for example—trainees take formal courses, often provided at the job site, to prepare for the required licensing exams. Individuals undergoing training are generally considered to be employed in the occupation. This group of occupations also includes musicians, athletes, actors, and other entertainers, occupations that require natural ability that must be developed over several years. Eighty-nine occupations employing 13.7 million workers rely on this type of training.

Moderate length on-the-job training. There are 119 occupations, employing 16.2 million people, in which workers can achieve average job performance after 1 to 12 months of combined on-the-job experience and informal training, which can include observing experienced workers. Individuals undergoing training are generally considered to be employed in the occupation. This type of training is found among occupations such as dental assistants, drywall installers and finishers, operating engineers, and machine operators. This training relies on trainees watching experienced workers and asking questions. Trainees are given progressively more difficult assignments as they demonstrate their mastery of lower level skills.

Short-term on-the-job training. The largest training category, short-term on-the-job training, is considered the appropriate level of training for 120 occupations that employed 49.7 million workers—about 4 of every 10 workers in the economy. Included are occupations like cashier, bank teller, messenger, highway maintenance worker, and veterinary assistant. In these occupations, workers generally can achieve average job performance in just a few days or weeks by working with and observing experienced employees and by asking questions.

While this classification structure is a step forward in analyzing the relationship between education and training requirements and other labor market variables for occupations, further improvements still need to be made. Because the labor market is so dynamic, education and training requirements will continue to change. Therefore, the classification will be updated every 2 years as part of the regular revision of the *Handbook*.

Not all problems can be solved, however. For all occupations with multiple ways to become job-qualified, the assigned category will apply only to the workers who take the most common path into the occupation. The routes taken by other workers can be indicated in the narratives of the *Handbook*, but they will not be presented in statistical summaries. Therefore, for some occupations, the analysis will inevitably be incorrect for a certain proportion of the workers.

Using the new system

These more detailed education and training categories provide a major advantage over any based solely on educational attainment or a single work related category. This very significant advantage is their ability distinguish between occupations with comparable educational requirements. For example, neither carpenters nor laborers in the construction trade require formal education beyond high school, but the complexity of work and training time required for workers in each to become fully qualified differs significantly. As a result, carpenters are classified in the category, long-term on-the-job training; the laborers, in short-term on-the-job training.

The greater detail of the new categories increases the homogeneity of education and training possessed by employees among occupations within categories and thus improves analyses based on them. Many perspectives on the labor market can be developed using current and projected occupational employment information, and other labor market data assembled as part of the Occupational Outlook program. An examination of 1994 employment illustrates potential uses.

Chart 1 presents 1994 employment from the national industry-occupation matrix distributed by the new education and training categories and earnings quartiles. The results provide information useful to students seeking information in selecting a career, training program planners, and others. Short-term on-the-job training was the predominant category for almost 40 percent of all jobs—by far the largest. The chart also shows that short-term on-the-job training had both the largest number and the largest proportion of jobs with very low earnings. In contrast, jobs placed in categories in which academic training at the bachelor's degree or higher category were most common had very few jobs with less than high earnings. Although the chart presents summary information, occupations within each education and training category and earnings quartile can be identified.

Occupations classified by their predominant education and training category can be analyzed by a variety of other labor market variables. Using this classification, BLS recently compared the training requirements of occupations with actual 1994 and projected 2005 employment, 1994-2005 openings due to growth and net replacement needs, and 1994 average earnings. These analyses show which high earnings occupations have low education or training requirements and which training categories will generate the most job openings over the 1994-2005 period. These analyses are discussed in some detail in *Employment Outlook: 1994-2005, Job Quality and Other Aspects of Projected Employment Growth*, Bulletin 2472, Bureau of Labor Statistics.

Chart 1. Employment by education and training categories and earnings quartiles, 1994

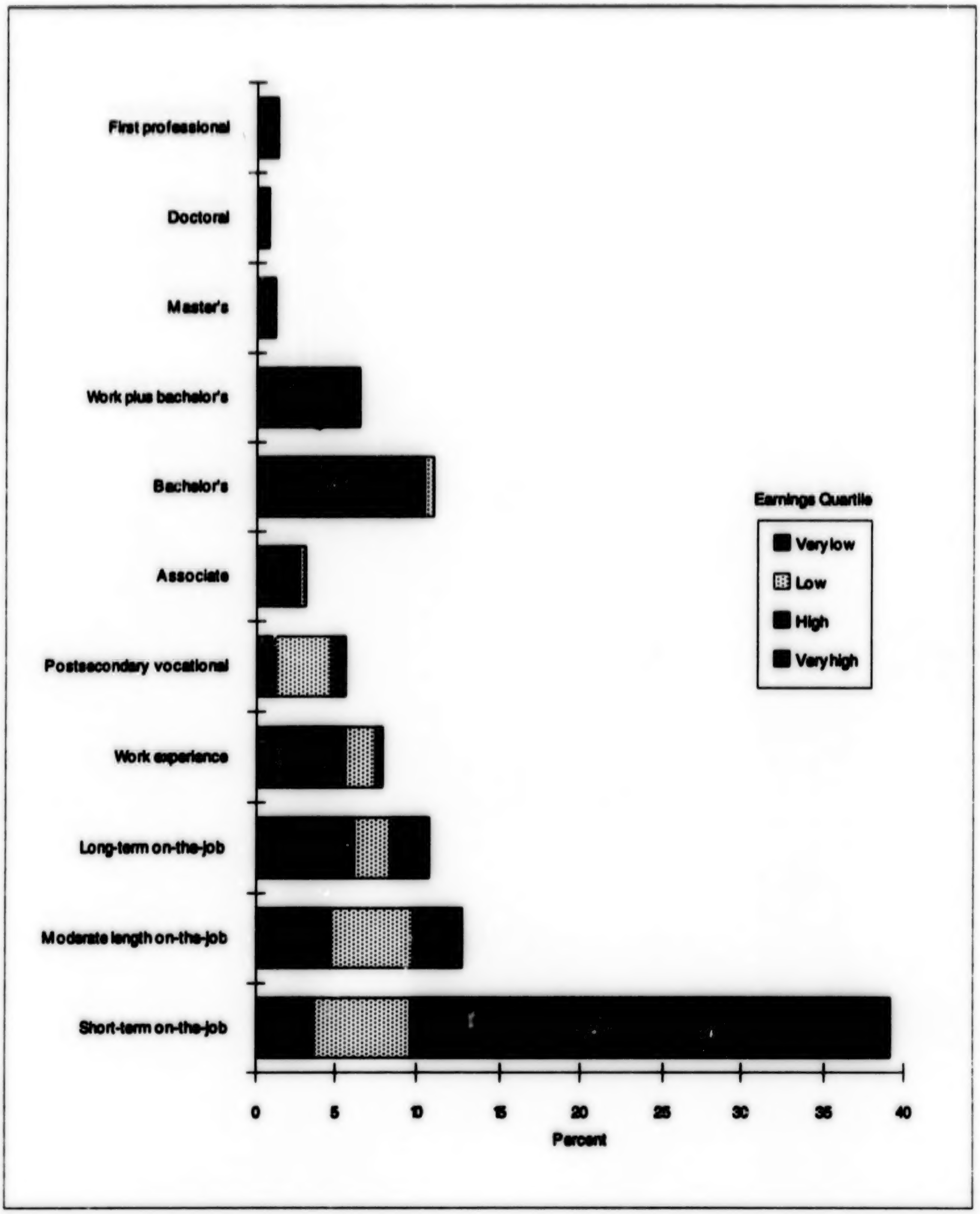

Chart 1, the studies referenced above, and table 2 in chapter 2—which presents current and projected employment, as well as rankings of selected characteristics for all national industry-occupation matrix occupations—were prepared from the same BLS data base. Additional insights into the current and projected job market can be developed using this data base. While BLS plans additional analyses, some researchers may desire information about topics not scheduled for examination. For those wishing to conduct their own research, an electronic copy of the data base is available on request.[2]

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[2] Call the Chief, Division of Occupational Outlook at (202) 606-5701.

Table 1. 1994 National industry-occupation matrix occupations by education and training category

First professional degree

Chiropractors
Clergy
Dentists
Lawyers
Optometrists
Physicians
Podiatrists
Veterinarians and veterinary inspectors

Doctoral degree

All other life scientists
Biological scientists
College and university faculty
Mathematicians and all other mathematical scientists
Medical scientists
Physicists and astronomers

Master's degree

All other social scientists
All other teachers and instructors
Counselors
Curators, archivists, museum technicians, and restorers
Librarians, professional
Management analysts
Operations research analysts
Psychologists
Speech-language pathologists and audiologists
Urban and regional planners

Work experience plus bachelor's or higher degree

Administrative services managers
All other managers and administrators
Artists and commercial artists
Communications, transportation, and utilities operations managers
Education administrators
Engineering, mathematics, and natural science managers
Farm managers
Financial managers
General managers and top executives
Government chief executives and legislators
Judges, magistrates, and other judicial workers
Marketing, advertising, and public relations managers
Personnel, training, and labor relations managers
Purchasing managers

Bachelor's degree

Accountants and auditors
Actuaries
Aeronautical and astronautical engineers
Agricultural and food scientists
All other computer scientists
All other engineers
All other management support workers
All other physical scientists
All other professional workers
All other therapists
Animal breeders and trainers
Architects, except landscape and marine
Budget analysts
Chemical engineers
Chemists
Civil engineers, including traffic engineers
Claims examiners, property and casualty insurance
Clinical laboratory technologists and technicians
Computer engineers
Computer programmers
Construction managers
Credit analysts
Designers, except interior
Dietitians and nutritionists
Directors, religious activities and education
Economists
Electrical and electronics engineers
Employment interviewers, private or public employment service
Farm and home management advisors
Foresters and conservation scientists
Geologists, geophysicists, and oceanographers
Industrial engineers, except safety engineers
Industrial production managers
Interior designers
Landscape architects
Loan officers and counselors
Mechanical engineers
Metallurgists and metallurgical, ceramic, and materials engineers
Meteorologists
Mining engineers, including mine safety engineers
Nuclear engineers
Occupational therapists
Personnel, training, and labor relations specialists
Petroleum engineers
Pharmacists
Physical therapists
Physician assistants
Property and real estate managers
Public relations specialists and publicity writers
Purchasing agents, except wholesale, retail, and farm products
Recreation workers
Recreational therapists
Reporters and correspondents
Residential counselors
Social workers
Statisticians
Systems analysts
Tax examiners, collectors, and revenue agents
Teachers, elementary school
Teachers, preschool and kindergarten
Teachers, secondary school
Teachers, special education
Underwriters
Wholesale and retail buyers, except farm products
Writers and editors, including technical writers

Table 1. 1994 National industry-occupation matrix occupations by education and training category—Continued

Associate's degree

All other engineering technicians and technologists
All other health professionals and paraprofessionals
All other legal assistants, including law clerks
Cardiology technologists
Dental hygienists
Electrical and electronic technicians and technologists
Medical records technicians
Nuclear medicine technologists
Paralegals
Psychiatric technicians
Radiologic technologists and technicians
Registered nurses
Respiratory therapists
Science and mathematics technicians
Veterinary technicians and technologists

Postsecondary vocational training

Aircraft engine specialists
Aircraft mechanics
All other communications equipment mechanics, installers, and repairers
All other electrical and electronic equipment mechanics, installers, and repairers
Barbers
Broadcast technicians
Central office and PBX installers and repairers
Dancers and choreographers
Data entry keyers, composing
Data entry keyers, except composing
Data processing equipment repairers
Drafters
Electronic home entertainment equipment repairers
Electronics repairers, commercial and industrial equipment
Emergency medical technicians
Hairdressers, hairstylists, and cosmetologists
Legal secretaries
Licensed practical nurses
Manicurists
Medical secretaries
Radio mechanics
Sales agents, real estate
Secretaries, except legal and medical
Station installers and repairers, telephone
Stenographer
Surgical technologists
Surveyors
Travel agents
Welders and cutters

Work experience in a related occupation

Aircraft assemblers, precision
All other precision assemblers
All other service workers
Blue-collar worker supervisors
Brokers, real estate
Captains and other officers, fishing vessels
Captains and pilots, ship
Clerical supervisors and managers
Construction and building inspectors
Cost estimators
Custom tailors and sewers
Electrical and electronic equipment assemblers, precision
Electromechanical equipment assemblers, precision
Fire fighting and prevention supervisors
Fire inspection occupations
Fitters, structural metal, precision
Food service and lodging managers
Inspectors and compliance officers, except construction
Inspectors, testers, and graders, precision
Institutional cleaning supervisors
Instructors, adult (nonvocational) education
Lawn service managers
Locomotive engineers
Machine builders and other precision machine assemblers
Marketing and sales worker supervisors
Mates, ship, boat, and barge
New accounts clerks, banks
Nursery and greenhouse managers
Police and detective supervisors
Police detectives and investigators
Programmers, numerical, tool, and process control
Rail yard engineers, dinkey operators, and hostlers
Railroad brake, signal, and switch operators
Railroad conductors and yardmasters
Real estate appraisers
Ship engineers
Supervisors, farm, forestry, and agriculture related occupations
Teachers and instructors, vocational education and training

Long-term on-the-job training

Air traffic controllers and airplane dispatchers
Aircraft pilots and flight engineers
All other mechanics, installers, and repairers
All other plant and system operators
All other precision food and tobacco workers
All other precision metal workers
All other precision textile, apparel, and furnishings workers
All other precision woodworkers
All other precision workers
All other printing workers, precision
Athletes, coaches, umpires, and related workers
Automotive body and related repairers
Automotive mechanics
Boilermakers
Bricklayers and stone masons
Bus and truck mechanics and diesel engine specialists
Butchers and meatcutters
Cabinetmakers and bench carpenters
Camera operators
Carpenters
Chemical plant and system operators
Coin and vending machine servicers and repairers
Compositors and typesetters, precision
Concrete and terrazzo finishers
Cooks, institution or cafeteria
Cooks, restaurant
Correction officers
Dental laboratory technicians, precision
Electric meter installers and repairers
Electric powerline installers and repairers
Electricians
Electromedical and biomedical equipment repairers
Electronic pagination systems workers
Elevator installers and repairers
Farm equipment mechanics
Farmers
Fire fighters
Flight attendants
Funeral directors and morticians
Furniture finishers
Gas and petroleum plant and system occupations
Glaziers

Table 1. 1994 National industry-occupation matrix occupations by education and training category—Continued

Long-term on-the-job training—continued

Hard tile setters
Heating, air-conditioning, and refrigeration mechanics and installers
Home appliance and power tool repairers
Industrial machine mechanics
Insurance adjusters, examiners, and investigators
Insurance sales workers
Jewelers and silversmiths
Job printers
Machinists
Maintenance repairers, general utility
Millwrights
Mining, quarrying, and tunneling occupations
Mobile heavy equipment mechanics
Motorcycle repairers
Musical instrument repairers and tuners
Musicians
Office machine and cash register servicers
Optical goods workers, precision
Opticians, dispensing and measuring
Paste-up workers
Patternmakers and layout workers, fabric and apparel
Photoengravers
Photographic process workers, precision
Plasterers
Platemakers
Plumbers, pipefitters, and steamfitters
Police patrol officers
Power distributors and dispatchers
Power generating and reactor plant operators
Precision instrument repairers
Producers, directors, actors, and entertainers
Radio and TV announcers and newscasters
Riggers
Securities and financial services sales workers
Sheriffs and deputy sheriffs
Shipfitters
Shoe and leather workers and repairers, precision
Small engine specialists
Stationary engineers
Strippers, printing
Structural and reinforcing metal workers
Telephone and cable TV line installers and repairers
Tool and die makers
Upholsterers
Watchmakers
Water and liquid waste treatment plant and system operators
Wood machinists

Moderate length on-the-job training

All other adjusters and investigators
All other communications equipment operators
All other construction trades workers
All other extraction and related workers
All other machine operators, tenders, setters, and set-up operators
All other machine tool cutting and forming setters and set-up operators
All other material moving equipment operators
All other metal and plastic machine setters, operators, and related workers
All other oil and gas extraction occupations
All other printing press setters and set-up operators
All other printing, binding, and related workers
All other sales and related workers
All other technicians
All other transportation and material moving equipment operators
Bakers, bread and pastry
Bakers, manufacturing
Bicycle repairers
Bindery machine operators and set-up operators
Boiler operators and tenders, low pressure
Bookbinders
Bookkeeping, accounting, and auditing clerks
Bus drivers, except school
Camera and photographic equipment repairers
Camera operators, television, motion picture, and video
Carpet installers
Ceiling tile installers and acoustical carpenters
Cement and gluing machine operators and tenders
Central office operators
Chemical equipment controllers, operators, and tenders
Coating, painting, and spraying machine operators, tenders, and setters
Combination machine tool setters, set-up operators, and operators
Computer operators, except peripheral equipment
Cooking and roasting machine operators and tenders, food and tobacco
Cooks, private household
Crane and tower operators
Crushing and mixing machine operators and tenders
Cutting and slicing machine setters, operators, and tenders
Dairy processing equipment operators, including setters
Dental assistants
Detectives, except public
Directory assistance operators
Dispatchers, except police, fire, and ambulance
Dispatchers, police, fire, and ambulance
Drilling machine tool setters and set-up operators, metal and plastic
Drywall installers and finishers
EKG technicians
Electrolytic plating machine operators and tenders, setters and set-up operators
Electroneurodiagnostic technologists
Electronic semiconductor processors
Excavation and loading machine operators
Extruding and forming machine operators and tenders, synthetic fiber
Extruding and forming machine setters, operators and tenders
Foundry mold assembly and shakeout workers
Furnace operators and tenders
Furnace, kiln, or kettle operators and tenders
Grader, dozer, and scraper operators
Grinding machine setters and set-up operators, metal and plastic
Head sawyers and sawing machine operators and tenders
Heat treating machine operators and tenders, metal and plastic
Hoist and winch operators
Housekeepers and butlers
Human services workers
Instructors and coaches, sports and physical training
Insulation workers
Insurance claims clerks
Insurance policy processing clerks
Lathe and turning machine tool setters and set-up operators, metal and plastic
Laundry and drycleaning machine operators and tenders, except pressing
Letterpress operators
Locksmiths and safe repairers
Log handling equipment operators
Logging tractor operators
Machine forming operators and tenders, metal and plastic
Machine tool cutters, operators, and tenders, metal and plastic
Medical assistants
Metal fabricators, structural metal products
Metal mold machine operators and tenders, setters and set-up operators
Numerical control machine tool operators and tenders, metal and plastic
Occupational therapy assistants and aides
Offset lithographic press operators
Operating engineers
Other law enforcement occupations
Packaging and filling machine operators and tenders
Painters and paperhangers, construction and maintenance
Painters, transportation equipment
Paper goods machine setters and set-up operators
Paving, surfacing, and tamping equipment operators
Peripheral EDP equipment operators
Pest controllers and assistants
Pharmacy technicians
Photoengraving and lithographic machine operators and tenders
Photographers

Table 1. 1994 National industry-occupation matrix occupations by education and training category—Continued

Moderate length on-the-job training—continued

Physical and corrective therapy assistants and aides
Pipelayers and pipelaying fitters
Plastic mold machine operators and tenders, setters and set-up operators
Pressing machine operators and tenders, textile, garment, and related materials
Printing press machine setters, operators, and tenders
Punching machine setters and set-up operators, metal and plastic
Roofers
Screen printing machine setters and set-up operators
Separating and still machine operators and tenders
Sewing machine operators, garment
Sewing machine operators, non-garment
Sheet metal workers and duct installers
Shoe sewing machine operators and tenders
Soldering and brazing machine operators and setters
Sprayers and applicators
Statistical clerks
Subway and streetcar operators
Textile bleaching and dyeing machine operators and tenders
Textile draw-out and winding machine operators and tenders
Textile machine setters and set-up operators
Tire building machine operators
Title examiners and searchers
Typesetting and composing machine operators and tenders
Typists and word processors
Welding machine setters, operators, and tenders
Welfare eligibility workers and interviewers
Woodworking machine operators and tenders, setters and set-up operators

Short-term on-the-job training

Able seamen, ordinary seamen, and marine oilers
Adjustment clerks
Advertising clerks
All other agriculture, forestry, fishing, and related workers
All other assemblers, fabricators, and hand workers
All other cleaners and building service workers
All other clerical and administrative support workers
All other food preparation and service workers
All other health service workers
All other helpers, laborers, and material movers, hand
All other material recording, scheduling, and distribution workers
All other motor vehicle operators
All other protective service workers
All other timber cutting and related logging workers
Ambulance drivers and attendants, except emergency medical technicians
Amusement and recreation attendants
Animal caretakers, except farm
Baggage porters and bellhops
Bank tellers
Bartenders
Bill and account collectors
Billing, cost, and rate clerks
Billing, posting, and calculating machine operators
Brokerage clerks
Bus drivers, school
Cannery workers
Cashiers
Child care workers
Child-care workers, private household
Cleaners and servants, private household
Coil winders, tapers, and finishers
Cooks, short order and fast food
Correspondence clerks
Counter and rental clerks
Court clerks
Credit authorizers
Credit checkers
Crossing guards
Customer service representatives, utilities
Cutters and trimmers, hand
Dining room and cafeteria attendants and bartender helpers
Driver/sales workers
Duplication, mail, and other office machine operators
Electrical and electronic assemblers
Fallers and buckers
Farm workers
File clerks
Fishers, hunters, and trappers
Food counter, fountain, and related workers
Food preparation workers
Forest and conservation workers
Freight, stock, and material movers, hand
Gardeners and groundskeepers, except farm
General office clerks
Grinders and polishers, hand
Guards
Hand packers and packagers
Helpers, construction trades
Highway maintenance workers
Home health aides
Hosts and hostesses, restaurant, lounge, and coffee shop
Hotel desk clerks
Industrial truck and tractor operators
Interviewing clerks, except personnel and social welfare
Janitors and cleaners, including maids and housekeepers
Lawn maintenance workers
Library assistants and bookmobile drivers
Loan and credit clerks
Loan interviewers
Machine assemblers
Machine feeders and offbearers
Mail clerks, except mail machine operators and Postal Service
Meat, poultry, and fish cutters and trimmers, hand
Messengers
Meter readers, utilities
Motion picture projectionists
Municipal clerks
Nursery workers
Nursing aides, orderlies, and attendants
Order clerks, material, merchandise, and service
Order fillers, wholesale and retail sales
Painting, coating, and decorating workers, hand
Parking lot attendants
Payroll and timekeeping clerks
Personal and home care aides
Personnel clerks, except payroll and timekeeping
Pharmacy assistants
Photographic processing machine operators and tenders
Postal mail carriers
Postal Service clerks
Pressers, hand
Procurement clerks
Production, planning, and expediting clerks
Proofreaders and copy markers
Pruners
Psychiatric aides
Real estate clerks
Receptionists and information clerks
Refuse collectors
Reservation and transportation ticket agents and travel clerks
Roustabouts
Salespersons, retail
Service station attendants
Sewers, hand
Shampooers
Solderers and brazers
Statement clerks
Stock clerks
Switchboard operators
Taxi drivers and chauffeurs
Teacher aides and educational assistants
Technical assistants, library
Tire repairers and changers
Traffic, shipping, and receiving clerks
Truck drivers, light and heavy
Ushers, lobby attendants, and ticket takers
Vehicle washers and equipment cleaners
Veterinary assistants
Waiters and waitresses
Weighers, measurers, checkers, and samplers

Chapter II. Selected Occupational Data, 1994 and Projected 2005

This chapter presents data on current and projected employment, employment change, self-employment, and annual average job openings for all national industry-occupation matrix occupations. For most of the preceding, and some additional categories of occupational information, rankings are presented designating the relative magnitude of data for each detailed occupation. In addition, table 2 identifies the category of education and training undertaken by most workers to become fully proficient in each detailed occupation.

Data sources

Table 2 presents information from two sources: 1) the National Industry-Occupation Matrix and 2) the Current Population Survey. The industry-occupation matrix is predominantly based on wage and salary occupational employment data collected from establishments as part of the Occupational Employment Statistics survey. This survey counts jobs. Individuals who hold more than one job are counted at each place they work. The CPS is a monthly survey of about 56,000 households that obtains demographic and labor force information about individuals. Employment information from the CPS counts individuals, not jobs. To develop total employment estimates, data on self-employed and unpaid family workers are derived from the CPS and combined with OES data on wage and salary employment.

Occupational data in the industry-occupation matrix are not strictly comparable with those in the CPS because of differences in occupational classification systems, and differences in concepts and methods used in the surveys. Information about worker characteristics that is based on CPS data is applied to industry-occupation matrix occupations based on judgments identifying the most comparable CPS occupations. Comparisons based on CPS occupations with fewer than 50,000 workers in 1994 and some other occupations for which the data appeared unreliable were excluded; data for CPS proxy occupations were substituted. Where possible, larger, closely related CPS occupations were chosen as proxies. For example, data for purchasing agents and buyers, n.e.c., were used to represent purchasing agents and buyers, farm products. When no detailed occupation could be identified, a summary occupation group was used. For example, data about all therapists was substituted for that of inhalation therapists.

Data presented

The source of the data for each variable and a brief discussion of its potential use is presented below. Rankings for most data categories are presented that identify the relative magnitude of variables in terms of the distribution of employment. For example, 1994 employment and projected 1994-2005 percent change in employment data were assembled for each occupation. Each occupation's employment as a percent of 1994 total employment was calculated. The occupations were sorted by employment change in descending order and the cumulative percent of 1994 employment for each was determined. Occupations within the group comprising less than 25 percent of total employment are designated VH for a Very High (VH) growth rate. Similarly, occupations sorted by descending order of employment change comprising 25-50 percent of employment receive the designation H for High; 50-75 percent, L for Low; and 75-100 percent, VL for Very Low. Occupations were sorted by other data elements and rankings determined in the same manner.

Employment, 1994 and 2005. (Source: Bureau of Labor Statistics, national industry-occupation matrices for 1994 and 2005.) Employment information is a useful starting point for assessing opportunities because large occupations generally have more openings than small ones regardless of growth or replacement rates.

Employment change, 1994-2005, numeric. (Source: Bureau of Labor Statistics, national industry-occupation matrices for 1994 and 2005.) Information on numerical change provides an absolute measure of projected job gains or losses.

Employment change, 1994-2005, percent. (Source: Bureau of Labor Statistics, national industry-occupation matrices for 1994 and 2005.) The percent change in employment measures the rate of change. When an occupation grows rapidly, this usually indicates favorable prospects for employment. Moreover, the strong demand for workers in a rapidly growing occupation improves chances for advancement and mobility. A modest percentage increase in employment growth can result in many more job openings in a large occupation than in a small occupation that is growing rapidly.

Percent self-employed. (Source: Bureau of Labor Statistics, national industry-occupation matrices for 1994 and 2005.) Knowledge of the percentage of self-employed workers may be important to individuals who are interested in creating and managing their own business. The percentage is calculated from Current Population Survey data about unincorporated self-employed persons and industry-occupation matrix employment data. The unincorporated self-employed work for profit or fees in their own business and, unlike self-employed persons in businesses that are incorporated, do not receive a wage or salary.

Job openings due to growth plus total replacement needs. (Source: Bureau of Labor Statistics, this publication.) Growth is calculated from national industry-occupation matrices for 1994-2005. Total replacement needs are calculated from 1990-91 CPS data and are described in chapter IV. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations. These data provide the broadest measure of opportunities and identify the total number of employees needed annually to enter an occupation.

Job openings due to growth plus net replacement needs. (Source: Bureau of Labor Statistics, this publication.) Growth is calculated from national industry-occupation matrices for 1994-2005. Net replacement needs are calculated from CPS data and are described in chapter IV. Data from CPS proxy occupations are used to estimate replacement needs for some matrix occupations. These data estimate the number of new entrants needed annually for an occupation and, if training is required, measure minimum training needs.

Weekly earnings. (Source: 1994 Current Population Survey, annual average data for wage and salary employees who usually worked full time.) Median earnings of full-time workers are used to compare earnings among occupations. Data from CPS proxy occupations are used to estimate earnings for some matrix occupations.

Unemployment rate. (Source: 1994 Current Population Survey, annual average data.) Some occupations are more susceptible to the factors that result in unemployment: Seasonality, fluctuations in economic conditions, and individual business failures. A high unemployment rate indicates that individuals in that occupation are more likely to become unemployed than those in one with a low rate. Data from CPS proxy occupations are used to estimate unemployment rates for some matrix occupations.

Part-time. (Source: 1994 Current Population Survey, annual average data.) Knowledge of the proportion of workers who work fewer than 35 hours per week may be important to individuals who prefer part-time work so that they can manage other responsibilities, such as attending school or taking care of a family. Data from CPS proxy occupations are used to estimate the proportion of part-time workers for some matrix occupations.

Education and training category. (Source: Bureau of Labor Statistics, this publication.) Occupations are classified into one of eleven new categories that describe the education and training needed by most workers to become fully qualified. The categories are: first professional degree, doctoral degree, master's degree, work experience in an occupation requiring a bachelor's or higher degree, bachelor's degree, associate's degree, postsecondary vocational training, work experience, long-term on-the-job training, moderate length on-the-job training, and short-term on-the-job training. Definitions and other information about the categories appear in chapter 1.

Using ranked information

Table 2 consolidates 1994 and 2005 projected employment data and for that reason alone is a convenient reference. Table 2 also greatly facilitates comparisons of occupational data. It contains rankings of information about current and projected employment, projected job openings, earnings, unemployment rates, and the proportion of workers on part-time schedules. Except for the unemployment and part-time categories, a high rating should be interpreted as indicating a favorable assessment. A high rating for the unemployment rate is considered undesirable. Unemployment rates in construction occupations, however, are inflated by the nature of the industry and distort comparisons. Individuals in these occupations typically incur periods of unemployment after completing a project and before starting work at a new job site.

The rating for the part-time category also should not be used routinely in assessing the desirability of employment because it can be interpreted differently depending on the perspective of the user. For example, high school students may consider a large proportion of part-time workers desirable because they normally prefer not to work full time. A recent college graduate or anyone seeking full-time employment may reach the opposite conclusion.

The information presented in table 2 has many potential uses because interests in occupational information are so varied. At times, users may want to know how a particular occupation, cashiers, for example, compares with others. The "VH" (very high) rankings in table 2 for the increase in the number of jobs and for both categories of job openings, point out that many jobs are available, certainly a favorable situation. The "VL" (very

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Total, all occupations	127,015	144,708	17,694	-	13.9	-	8.4	24,416	-
Executive, administrative, and managerial occupations	12,903	15,071	2,168	-	16.8	-	12.4	1,360	-
[illegible]									
Administrative services managers	279	307	28	L	10.1	L	0.0	26	VL
Communication, transportation, and utilities operations managers	154	135	-19	VL	12.2	L	0.0	11	VL
Construction managers	197	253	56	L	28.4	VH	1.0	22	VL
Education administrators	393	459	66	L	16.9	H	13.8	39	L
Engineering, mathematical, and natural science managers	337	432	95	L	28.1	VH	0.0	37	L
Financial managers	768	950	182	H	23.7	VH	1.4	74	L
Food service and lodging managers	579	771	192	H	33.2	VH	37.5	68	L
Funeral directors and morticians[1]	26	29	3	VL	10.6	L	11.6	2	VL
[illegible]									
Government chief executives and legislators[1]	91	94	4	VL	4.2	VL	0.0	5	VL
Industrial production managers	206	191	-15	VL	-7.1	VL	0.0	15	VL
Marketing, advertising, and public relations managers	461	575	114	H	24.8	VH	2.4	55	L
Personnel, training, and labor relations managers	206	252	46	L	22.2	H	0.5	21	VL
Property and real estate managers	261	298	37	L	14.1	L	40.2	29	VL
Purchasing managers	226	235	9	VL	4.0	VL	0.4	11	VL
All other managers and administrators[1]	1,829	2,081	252	H	13.8	L	49.4	171	H
[illegible]									
Accountants and auditors	962	1,083	121	H	12.6	L	10.6	118	L
Budget analysts	66	74	8	VL	12.1	L	0.0	8	VL
Claims examiners, property and casualty insurance	56	65	9	VL	15.4	L	0.0	7	VL
Construction and building inspectors	64	79	14	L	22.5	H	1.6	6	VL
Cost estimators	179	210	31	L	17.5	H	0.0	24	VL
Credit analysts	39	48	9	VL	24.0	VH	0.0	5	VL
Employment interviewers, private or public employment service	77	104	27	L	35.5	VH	0.0	10	VL
Inspectors and compliance officers, except construction	157	175	18	L	11.6	L	1.3	12	VL
[illegible]									
Management analysts	231	312	82	L	35.4	VH	46.4	48	L
Personnel, training, and labor relations specialists	307	374	67	L	21.9	H	2.6	36	VL
Purchasing agents, except wholesale, retail, and farm products	215	226	12	VL	5.4	VL	0.0	21	VL
Tax examiners, collectors, and revenue agents	63	63	0	VL	0.2	VL	0.0	4	VL
Underwriters[1]	96	103	7	VL	7.1	VL	0.0	11	VL
Wholesale and retail buyers, except farm products	180	178	-3	VL	-1.5	VL	10.5	22	VL
All other management support workers[1]	940	1,138	198	H	21.1	H	5.4	124	L
Professional specialty occupations	17,314	22,387	5,073	-	29.3	-	8.8	2,323	-
[illegible]									
Aeronautical and astronautical engineers[1]	56	59	3	VL	5.8	VL	1.8	4	VL
Chemical engineers[1]	50	57	7	VL	13.2	L	2.0	1	VL
Civil engineers, including traffic engineers	184	219	34	L	18.6	H	4.9	16	VL
Electrical and electronics engineers	349	417	69	L	19.7	H	2.9	19	VL
Industrial engineers, except safety engineers	115	131	15	L	13.4	L	0.9	4	VL
Mechanical engineers	231	276	45	L	19.4	H	3.5	14	VL
Metallurgists and metallurgical, ceramic, and materials engineers[1]	19	20	1	VL	4.9	VL	5.4	1	VL
Mining engineers, including mine safety engineers[1]	3	3	-1	VL	17.7	H	0.0	0	VL
Nuclear engineers[1]	15	15	1	VL	4.0	VL	0.0	1	VL
Petroleum engineers[1]	14	11	-3	VL	21.3	H	0.0	1	VL
All other engineers[1]	292	367	75	L	25.7	VH	2.7	20	VL
Architects and surveyors	200	215	14	-	7.2	-	19.0	22	-
Architects, except landscape and marine	91	106	15	L	16.6	H	30.8	10	VL
Landscape architects	14	16	2	VL	16.6	H	21.6	2	VL
Surveyors[1]	96	92	-3	VL	-3.2	VL	7.3	10	VL

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
4,527	-	-	-	-	-	**Total, all occupations**
440	-	-	-	-	-	**Executive, administrative, and managerial occupations**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	VL	VH	VL	VL	Work experience, plus degree	Administrative services managers
3	VL	VH	VL	VL	Work experience, plus degree	Communication, transportation, and utilities operations managers
9	VL	VH	VL	VL	Bachelor's degree	Construction managers
16	L	VH	VL	L	Work experience, plus degree	Education administrators
15	L	VH	VL	VL	Work experience, plus degree	Engineering, mathematical, and natural science managers
29	H	VH	VL	VL	Work experience, plus degree	Financial managers
28	H	L	L	L	Work experience in a related occupation	Food service and lodging managers
1	VL	VH	VL	VL	Long-term O-J-T	Funeral directors and morticians[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	VL	VH	VL	VL	Work experience, plus degree	Government chief executives and legislators[1]
4	VL	VH	VL	VL	Bachelor's degree	Industrial production managers
19	L	VH	L	VL	Work experience, plus degree	Marketing, advertising, and public relations managers
9	L	VH	L	VL	Work experience, plus degree	Personnel, training, and labor relations managers
7	VL	H	VL	H	Bachelor's degree	Property and real estate managers
5	VL	VH	VL	VL	Work experience, plus degree	Purchasing managers
58	H	VH	VL	VL	Work experience, plus degree	All other managers and administrators[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
28	H	VH	VL	L	Bachelor's degree	Accountants and auditors
2	VL	VH	L	VL	Bachelor's degree	Budget analysts
1	VL	H	VL	VL	Bachelor's degree	Claims examiners, property and casualty insurance
3	VL	VH	L	VL	Work experience in a related occupation	Construction and building inspectors
4	VL	H	L	L	Work experience in a related occupation	Cost estimators
1	VL	VH	L	VL	Bachelor's degree	Credit analysts
4	VL	VH	L	VL	Bachelor's degree	Employment interviewers, private or public employment service
5	VL	VH	L	VL	Work experience in a related occupation	Inspectors and compliance officers, except construction
3	VL	VH	L	VL	[illegible]	[illegible]
10	L	VH	L	H	Master's degree	Management analysts
12	L	VH	L	VL	Bachelor's degree	Personnel, training, and labor relations specialists
6	VL	VH	L	VL	Bachelor's degree	Purchasing agents, except wholesale, retail, and farm products
1	VL	VH	VL	VL	Bachelor's degree	Tax examiners, collectors, and revenue agents
2	VL	VH	L	L	Bachelor's degree	Underwriters[1]
5	VL	H	L	L	Bachelor's degree	Wholesale and retail buyers, except farm products
34	H	VH	L	L	Bachelor's degree	All other management support workers[1]
762	-	-	-	-	-	**Professional specialty occupations**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	VH	L	VL	Bachelor's degree	Aeronautical and astronautical engineers[1]
2	VL	VH	VL	VL	Bachelor's degree	Chemical engineers[1]
8	VL	VH	VL	VL	Bachelor's degree	Civil engineers, including traffic engineers
14	L	VH	L	VL	Bachelor's degree	Electrical and electronics engineers
4	VL	VH	VL	VL	Bachelor's degree	Industrial engineers, except safety engineers
9	VL	VH	L	VL	Bachelor's degree	Mechanical engineers
1	VL	VH	L	VL	Bachelor's degree	Metallurgists and metallurgical, ceramic, and materials engineers[1]
0	VL	VH	L	VL	Bachelor's degree	Mining engineers, including mine safety engineers[1]
0	VL	VH	L	VL	Bachelor's degree	Nuclear engineers[1]
0	VL	VH	L	VL	Bachelor's degree	Petroleum engineers[1]
12	L	VH	L	VL	Bachelor's degree	All other engineers[1]
6	-	-	-	-	-	Architects and surveyors
3	VL	VH	L	L	Bachelor's degree	Architects, except landscape and marine
0	VL	VH	L	L	Bachelor's degree	Landscape architects
3	VL	H	L	VL	Postsecondary vocational training	Surveyors[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
[illegible]									
Agricultural and food scientists[1]	26	31	5	VL	18.5	H	15.5	2	VL
Biological scientists[1]	82	103	21	L	25.5	VH	4.9	7	VL
Foresters and conservation scientists[1]	41	49	8	VL	18.3	H	2.4	3	VL
Medical scientists[1]	36	47	11	VL	31.1	VH	2.8	3	VL
All other life scientists[1]	1	1	0	VL	1.1	VL	0.0	0	VL
[illegible]									
Actuaries[1]	17	18	1	VL	4.1	VL	11.6	1	VL
Computer systems analysts, engineers, and scientists	828	1,583	755	-	91.3	-	5.9	149	-
Computer engineers and scientists	345	655	310	-	90.0	-	3.5	62	-
Computer engineers	195	372	177	H	90.4	VH	4.1	35	VL
All other computer scientists	149	283	134	H	89.4	VH	2.7	27	VL
Systems analysts	483	928	445	VH	92.2	VH	7.7	87	L
Statisticians[1]	14	15	0	VL	2.7	VL	0.0	1	VL
Mathematicians and all other mathematical scientists[1]	14	15	1	VL	5.2	VL	0.0	1	VL
Operations research analysts	44	67	22	L	50.1	VH	0.0	5	VL
[illegible]									
Chemists[1]	97	115	18	L	18.6	H	1.0	11	VL
Geologists, geophysicists, and oceanographers[1]	46	54	8	VL	17.4	H	15.1	2	VL
Meteorologists[1]	7	7	0	VL	6.7	VL	0.0	0	VL
Physicists and astronomers[1]	20	18	-2	VL	-9.5	VL	5.0	1	VL
All other physical scientists[1]	40	56	16	L	40.7	VH	7.6	4	VL
[illegible]									
Economists	48	59	12	VL	24.7	VH	18.9	11	VL
Psychologists	144	177	33	L	23.0	H	43.7	11	VL
Urban and regional planners[1]	29	35	7	VL	23.7	VH	3.5	4	VL
All other social scientists[1]	38	45	7	VL	18.9	H	5.2	5	VL
[illegible]									
Clergy	195	234	38	L	19.6	H	0.0	15	VL
Directors, religious activities and education[1]	81	96	15	L	19.2	H	1.2	11	VL
Human services workers	168	293	125	H	74.5	VH	0.0	43	L
Recreation workers[1]	222	266	45	L	20.1	H	0.0	30	VL
Residential counselors	165	290	126	H	76.5	VH	0.0	39	L
Social workers	557	744	187	H	33.5	VH	3.1	76	L
[illegible]									
Judges, magistrates, and other judicial workers[1]	79	79	1	VL	0.7	VL	0.0	4	VL
Lawyers	656	839	183	H	27.9	VH	36.0	46	L
Teachers, librarians, and counselors	6,246	7,849	1,603	-	25.7	-	2.8	1,029	-
Teachers, preschool and kindergarten	462	602	140	H	30.3	VH	1.5	77	L
Teachers, elementary	1,419	1,639	220	H	15.5	L	0.0	164	H
Teachers, secondary school	1,340	1,726	386	VH	28.8	VH	0.0	168	H
Teachers, special education	388	593	206	H	53.0	VH	0.0	49	L
College and university faculty[1]	823	972	150	H	18.2	H	0.0	127	L
Other teachers and instructors	886	1,151	265	-	29.9	-	16.0	249	-
Farm and home management advisors	14	14	0	VL	-1.3	VL	0.0	3	VL
Instructors and coaches, sports and physical training	283	381	98	H	34.8	VH	0.0	82	L
Adult and vocational education teachers	590	757	167	-	28.3	-	24.1	164	-
Instructors, adult (nonvocational) education	290	376	85	L	29.4	VH	48.9	81	L
Teachers and instructors, vocational education and training	299	381	81	L	27.2	VH	0.0	82	L
[illegible]									
Librarians, archivists, curators, and related workers	168	182	14	-	8.4	-	0.0	25	-
Curators, archivists, museum technicians, and restorers[1]	19	23	4	VL	18.7	H	0.0	2	VL
Librarians, professional	148	159	10	VL	7.1	VL	0.0	17	VL
Counselors	165	215	50	L	30.6	VH	0.6	27	VL
[illegible]									
Chiropractors[1]	42	54	12	VL	29.2	VH	57.7	3	VL
Dentists[1]	164	173	9	VL	5.2	VL	48.6	5	VL

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	VH	VL	VL	Bachelor's degree	Agricultural and food scientists[1]
4	VL	VH	VL	VL	Doctor's degree	Biological scientists[1]
2	VL	VH	VL	VL	Bachelor's degree	Foresters and conservation scientists[1]
2	VL	VH	VL	VL	Doctor's degree	Medical scientists[1]
0	VL	VH	VL	VL	Doctor's degree	All other life scientists[1]
78	-	-	-	-	[illegible]	[illegible]
0	VL	VH	VL	VL	Bachelor's degree	Actuaries[1]
74	-	-	-	-	-	Computer systems analysts, engineers, and scientists
31	-	-	-	-	-	Computer engineers and scientists
17	L	VH	VL	VL	Bachelor's degree	Computer engineers
13	L	VH	VL	VL	Bachelor's degree	All other computer scientists
44	H	VH	VL	VL	Bachelor's degree	Systems analysts
0	VL	VH	VL	VL	Bachelor's degree	Statisticians[1]
0	VL	VH	VL	VL	Doctor's degree	Mathematicians and all other mathematical scientists[1]
3	VL	VH	VL	VL	Master's degree	Operations research analysts
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	VL	VH	VL	VL	Bachelor's degree	Chemists[1]
2	VL	VH	VL	VL	Bachelor's degree	Geologists, geophysicists, and oceanographers[1]
0	VL	VH	VL	VL	Bachelor's degree	Meteorologists[1]
0	VL	VH	VL	VL	Doctor's degree	Physicists and astronomers[1]
2	VL	VH	VL	VL	Bachelor's degree	All other physical scientists[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	VL	VH	L	L	Bachelor's degree	Economists
4	VL	VH	VL	H	Master's degree	Psychologists
1	VL	VH	VL	H	Master's degree	Urban and regional planners[1]
1	VL	VH	VL	H	Master's degree	All other social scientists[1]
76	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7	VL	H	VL	L	First professional degree	Clergy
3	VL	H	VL	L	Bachelor's degree	Directors, religious activities and education[1]
15	L	VL	VH	VH	Moderate-term O-J-T	Human services workers
8	VL	H	VL	L	Bachelor's degree	Recreation workers[1]
14	L	VH	VL	H	Bachelor's degree	Residential counselors
26	L	H	VL	L	Bachelor's degree	Social workers
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	VH	VL	L	Work experience, plus degree	Judges, magistrates, and other judicial workers[1]
24	L	VH	VL	VL	First professional degree	Lawyers
263	-	-	-	-	-	Teachers, librarians, and counselors
20	L	L	L	VH	Bachelor's degree	Teachers, preschool and kindergarten
46	H	VH	VL	L	Bachelor's degree	Teachers, elementary
71	VH	VH	VL	L	Bachelor's degree	Teachers, secondary school
24	L	VH	VL	L	Bachelor's degree	Teachers, special education
36	H	VH	VL	VH	Doctor's degree	College and university faculty[1]
30	-	-	-	-	-	Other teachers and instructors
0	VL	H	L	VH	Bachelor's degree	Farm and home management advisors
11	L	H	L	VH	Moderate-term O-J-T	Instructors and coaches, sports and physical training
19	-	-	-	-	-	Adult and vocational education teachers
10	L	H	L	VH	Work experience in a related occupation	Instructors, adult (nonvocational) education
9	L	H	L	VH	Work experience in a related occupation	Teachers and instructors, vocational education and training
[illegible]	L	VH	L	VH	[illegible]	[illegible]
9	-	-	-	-	-	Librarians, archivists, curators, and related workers
1	VL	VH	L	H	Master's degree	Curators, archivists, museum technicians, and restorers[1]
4	VL	VH	VL	H	Master's degree	Librarians, professional
8	VL	VH	VL	H	Master's degree	Counselors
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	VL	VH	VL	L	First professional degree	Chiropractors[1]
5	VL	VH	VL	H	First professional degree	Dentists[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Optometrists[1]	37	42	4	VL	11.6	L	37.5	2	VL
Physicians	539	659	120	H	22.3	H	20.4	30	VL
Podiatrists[1]	13	15	2	VL	15.5	L	46.6	1	VL
Veterinarians and veterinary inspectors[1]	56	62	6	VL	10.8	L	39.6	2	VL
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dietitians and nutritionists	53	63	10	VL	19.0	H	13.2	4	VL
Pharmacists	168	196	28	L	16.9	H	4.2	14	VL
Physician assistants[1]	56	69	13	VL	23.3	H	0.0	5	VL
Registered nurses	1,906	2,379	473	VH	24.8	VH	0.9	165	H
Therapists	380	586	207	-	54.4	-	6.3	59	-
Occupational therapists[1]	54	93	39	L	72.2	VH	5.6	10	VL
Physical therapists[1]	102	183	81	L	80.0	VH	5.9	19	VL
Recreational therapists[1]	31	37	7	VL	22.4	H	9.8	3	VL
Respiratory therapists[1]	73	99	26	L	36.4	VH	0.0	9	VL
Speech-language pathologists and audiologists[1]	85	125	39	L	46.0	VH	10.5	12	VL
All other therapists[1]	36	50	14	L	38.9	VH	8.4	5	VL
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Artists and commercial artists[1]	273	336	64	L	23.4	H	60.9	47	L
Athletes, coaches, umpires, and related workers[1]	38	46	8	VL	20.3	H	31.4	8	VL
Dancers and choreographers[1]	24	30	6	VL	24.1	VH	36.8	4	VL
Designers	301	384	84	-	27.8	-	34.9	52	-
Designers, except interior designers	238	314	76	L	31.9	VH	31.9	42	L
Interior designers	63	70	8	VL	12.0	L	46.3	9	VL
Musicians	256	317	62	L	24.2	VH	25.8	49	L
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Camera operators, television, motion picture, video	18	19	1	VL	5.8	VL	5.5	2	VL
Photographers	121	153	32	L	26.9	VH	43.8	20	VL
Producers, directors, actors, and entertainers[1]	93	121	28	L	29.9	VH	23.7	17	VL
Public relations specialists and publicity writers	107	128	21	L	19.8	H	5.6	18	VL
Radio and TV announcers and newscasters[1]	50	51	0	VL	0.7	VL	0.0	2	VL
Reporters and correspondents	59	57	-2	VL	-3.7	VL	11.9	6	VL
Writers and editors, including technical writers	272	332	59	L	21.7	H	31.2	41	L
All other professional workers[1]	822	1,142	319	VH	38.8	VH	2.4	154	H
Technicians and related support occupations	4,439	5,316	876	-	19.7	-	2.0	529	-
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cardiology technologists	14	17	3	VL	22.3	H	0.0	2	VL
Clinical laboratory technologists and technicians	274	307	33	L	11.9	L	0.7	24	VL
Dental hygienists[1]	127	180	53	L	42.1	VH	1.6	18	VL
Electroneurodiagnostic technologists	6	8	2	VL	28.1	VH	0.0	1	VL
EKG technicians	16	11	-5	VL	29.7	VH	0.0	1	VL
Emergency medical technicians	138	187	49	L	35.6	VH	0.0	19	VL
Licensed practical nurses	702	899	197	H	28.0	VH	0.6	82	L
Medical records technicians[1]	81	126	45	L	55.8	VH	0.0	13	VL
Nuclear medicine technologists	13	16	3	VL	25.6	VH	0.0	1	VL
Opticians, dispensing and measuring[1]	63	76	13	VL	21.3	H	6.4	8	VL
Pharmacy technicians	81	101	20	L	24.3	VH	0.0	10	VL
Psychiatric technicians	72	80	8	VL	11.3	L	0.0	15	VL
Radiologic technologists and technicians	167	226	59	L	35.2	VH	0.0	13	VL
Surgical technologists	46	65	19	L	42.5	VH	0.0	7	VL
Veterinary technicians and tehnologists[1]	22	26	4	VL	17.5	H	0.0	2	VL
All other health professionals and paraprofessionals[1]	374	488	114	H	30.4	VH	4.0	46	L
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Engineering technicians	685	746	61	-	8.9	-	2.0	76	-
Electrical and electronic technicians and technologists	314	349	35	L	11.1	L	2.2	31	VL
All other engineering technicians and technologists[1]	371	397	26	L	7.0	VL	1.9	44	L
Drafters	304	304	1	VL	0.2	VL	3.0	45	L
Science and mathematics technicians[1]	231	262	31	L	13.4	L	0.9	23	VL
Technicians, except health and engineering and science	1,023	1,189	167	-	16.3	-	3.7	121	-

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
1	VL	VH	VL	L	First professional degree	Optometrists[1]
19	L	VH	VL	VL	First professional degree	Physicians
0	VL	VH	VL	L	First professional degree	Podiatrists[1]
2	VL	VH	VL	L	First professional degree	Veterinarians and veterinary inspectors[1]
2	VL	H	L	H	Bachelor's degree	Dietitians and nutritionists
5	VL	VH	VL	H	Bachelor's degree	Pharmacists
2	VL	VH	VL	H	Bachelor's degree	Physician assistants[1]
67	VH	VH	VL	H	Associate degree	Registered nurses
24	-	-	-	-	-	Therapists
4	VL	VH	VL	H	Bachelor's degree	Occupational therapists[1]
9	VL	VH	VL	H	Bachelor's degree	Physical therapists[1]
1	VL	VH	VL	H	Bachelor's degree	Recreational therapists[1]
3	VL	VH	VL	H	Associate degree	Respiratory therapists[1]
5	VL	VH	VL	H	Master's degree	Speech-language pathologists and audiologists[1]
2	VL	VH	VL	H	Bachelor's degree	All other therapists[1]
11	L	H	L	H	Work experience, plus degree	Artists and commercial artists[1]
2	VL	H	L	H	Long-term O-J-T	Athletes, coaches, umpires, and related workers[1]
1	VL	H	L	H	Postsecondary vocational training	Dancers and choreographers[1]
12	-	-	-	-	-	Designers
10	L	VH	L	H	Bachelor's degree	Designers, except interior designers
2	VL	VH	L	H	Bachelor's degree	Interior designers
10	L	L	VH	VH	Long-term O-J-T	Musicians
0	VL	H	L	H	Moderate-term O-J-T	Camera operators, television, motion picture, video
5	VL	H	L	H	Moderate-term O-J-T	Photographers
4	VL	H	L	H	Long-term O-J-T	Producers, directors, actors, and entertainers[1]
4	VL	H	L	H	Bachelor's degree	Public relations specialists and publicity writers
2	VL	H	L	H	Long-term O-J-T	Radio and TV announcers and newscasters[1]
1	VL	VH	VL	L	Bachelor's degree	Reporters and correspondents
10	L	VH	VL	H	Bachelor's degree	Writers and editors, including technical writers
45	H	H	L	H	Bachelor's degree	All other professional workers[1]
163	-	-	-	-	-	Technicians and related support occupations
1	VL	L	VL	H	Associate degree	Cardiology technologists
8	VL	H	VL	H	Bachelor's degree	Clinical laboratory technologists and technicians
7	VL	H	VL	H	Associate degree	Dental hygienists[1]
0	VL	L	VL	H	Moderate-term O-J-T	Electroneurodiagnostic technologists
0	VL	L	VL	H	Moderate-term O-J-T	EKG technicians
7	VL	L	VL	H	Postsecondary vocational training	Emergency medical technicians
31	H	H	L	H	Postsecondary vocational training	Licensed practical nurses
5	VL	H	VL	H	Associate degree	Medical records technicians[1]
0	VL	H	VL	H	Associate degree	Nuclear medicine technologists
3	VL	L	L	L	Long-term O-J-T	Opticians, dispensing and measuring[1]
3	VL	L	VL	H	Moderate-term O-J-T	Pharmacy technicians
2	VL	VL	H	H	Associate degree	Psychiatric technicians
7	VL	H	VL	H	Associate degree	Radiologic technologists and technicians
2	VL	L	VL	H	Postsecondary vocational training	Surgical technologists
1	VL	H	H	L	Associate degree	Veterinary technicians and tehnologists[1]
16	L	H	VL	H	Associate degree	All other health professionals and paraprofessionals[1]
19	-	-	-	-	-	Engineering technicians
10	L	VH	L	VL	Associate degree	Electrical and electronic technicians and technologists
9	VL	H	L	VL	Associate degree	All other engineering technicians and technologists[1]
6	VL	H	H	L	Postsecondary vocational training	Drafters
7	VL	H	H	L	Associate degree	Science and mathematics technicians[1]
38	-	-	-	-	-	Technicians, except health and engineering and science

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NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Aircraft pilots and flight engineers	91	97	7	VL	7.5	L	2.2	7	VL
Air traffic controllers and airplane dispatchers[1]	29	29	0	VL	0.2	VL	0.0	3	VL
Broadcast technicians[1]	42	40	-2	VL	-4.4	VL	2.4	5	VL
Computer programmers	537	601	65	L	12.0	L	4.8	59	L
Legal assistants and technicians, except clerical	219	301	82	-	37.6	-	3.7	33	-
Paralegals	110	175	64	L	58.3	VH	0.9	22	VL
Title examiners and searchers	28	28	0	VL	0.5	VL	18.0	3	VL
All other legal assistants, including law clerks	80	98	18	L	22.0	H	2.5	8	VL
Programmers, numerical, tool, and process control[1]	7	6	-1	VL	-8.6	VL	0.0	1	VL
Technical assistants, library	75	91	16	L	20.7	H	0.0	11	VL
All other technicians[1]	24	24	0	VL	-0.1	VL	4.2	3	VL
Marketing and sales occupations	13,990	16,502	2,512	-	18.0	-	13.0	3,721	-
Counter and rental clerks	341	451	109	H	32.0	VH	1.2	130	L
Insurance sales workers	418	436	18	L	4.3	VL	30.1	35	VL
Marketing and sales worker supervisors	2,293	2,673	380	VH	16.6	H	36.9	308	H
Real estate agents, brokers, and appraisers	374	407	33	-	8.9	-	61.7	61	-
Brokers, real estate	67	75	8	VL	12.0	L	59.6	11	VL
Real estate appraisers	47	53	6	VL	12.7	L	21.1	8	VL
Sales agents, real estate	260	279	19	L	7.5	L	69.7	42	L
Salespersons, retail	3,842	4,374	532	VH	13.9	L	4.0	1,236	VH
Securities and financial services sales workers	246	335	90	L	36.6	VH	22.4	41	L
Travel agents	122	150	28	L	23.1	H	9.0	38	L
All other sales and related workers[1]	3,349	4,109	760	VH	22.7	H	10.7	765	VH
Administrative support occupations, including clerical	23,178	24,172	994	-	4.3	-	2.0	4,467	-
Adjustment clerks	373	521	148	H	39.6	VH	0.0	81	L
Bill and account collectors	250	342	91	L	36.5	VH	1.2	68	L
Insurance claims and policy processing occupations	461	495	35	-	7.5	-	1.3	78	-
Insurance adjusters, examiners, and investigators	162	192	30	L	18.6	H	3.7	22	VL
Insurance claims clerks	119	135	16	L	13.4	L	0.0	15	VL
Insurance policy processing clerks	179	168	-12	VL	-6.4	VL	0.0	40	L
Welfare eligibility workers and interviewers	104	108	4	VL	3.8	VL	0.0	16	VL
All other adjusters and investigators	41	40	0	VL	-0.8	VL	4.9	6	VL
Telephone operators	310	260	-50	-	16.2	-	0.0	40	-
Central office operators	48	14	-34	VL	70.3	VH	0.0	4	VL
Directory assistance operators	33	10	-24	VL	70.4	VH	0.0	3	VL
Switchboard operators	228	236	7	VL	3.2	VL	0.0	33	VL
All other communications equipment operators[1]	9	6	-3	VL	31.3	VH	0.0	1	VL
Computer operators and peripheral equipment operators	289	175	-114	-	39.5	-	1.0	36	-
Computer operators, except peripheral equipment	259	162	-98	VL	37.7	VH	1.2	33	VL
Peripheral EDP equipment operators[1]	30	13	-16	VL	54.8	VH	0.0	3	VL
Hotel desk clerks[1]	136	163	27	L	20.0	H	1.5	51	L
Interviewing clerks, except personnel and social welfare	69	83	14	VL	19.8	H	0.0	19	VL
New accounts clerks, banking	114	116	2	VL	1.9	VL	0.0	28	VL
Receptionists and information clerks	1,019	1,337	318	VH	31.2	VH	3.1	337	VH
Reservation and transportation ticket agents and travel clerks	139	133	-6	VL	-4.3	VL	0.0	36	VL
Mail clerks, except mail machine operators and postal service	127	116	-10	VL	-8.2	VL	0.8	31	VL
Messengers	133	140	7	VL	4.9	VL	5.2	25	VL
Postal clerks and mail carriers	474	481	7	-	1.4	-	0.0	18	-
Postal mail carriers	320	[illegible]	-1	VL	-0.2	VL	0.0	6	VL
Postal service clerks	154	161	7	VL	4.7	VL	0.0	12	VL

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Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unem-ployment rate	Part-time		
3	VL	VH	L	H	Long-term O-J-T	Aircraft pilots and flight engineers
1	VL	VH	L	L	Long-term O-J-T	Air traffic controllers and airplane dispatchers[1]
1	VL	VH	L	L	Postsecondary vocational training	Broadcast technicians[1]
21	L	VH	VL	VL	Bachelor's degree	Computer programmers
9	-	-	-	-	-	Legal assistants and technicians, except clerical
7	VL	H	L	L	Associate degree	Paralegals
0	VL	H	L	L	Moderate-term O-J-T	Title examiners and searchers
2	VL	VH	VL	L	Associate degree	All other legal assistants, including law clerks
0	VL	VH	L	L	Work experience in a related occupation	Programmers, numerical, tool, and process control[1]
3	VL	H	L	L	Short-term O-J-T	Technical assistants, library
0	VL	H	L	L	Moderate-term O-J-T	All other technicians[1]
610	-	-	-	-	-	**Marketing and sales occupations**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
18	L	VL	VH	VH	Short-term O-J-T	Counter and rental clerks
8	VL	VH	VL	L	Long-term O-J-T	Insurance sales workers
72	VH	H	L	L	Work experience in a related occupation	Marketing and sales worker supervisors
10	-	-	-	-	-	Real estate agents, brokers, and appraisers
2	VL	VH	VL	L	Work experience in a related occupation	Brokers, real estate
1	VL	VH	VL	L	Work experience in a related occupation	Real estate appraisers
7	VL	VH	VL	L	Postsecondary vocational training	Sales agents, real estate
166	VH	L	H	VH	Short-term O-J-T	Salespersons, retail
11	L	VH	L	L	Long-term O-J-T	Securities and financial services sales workers
5	VL	L	H	H	Postsecondary vocational training	Travel agents
158	VH	H	L	H	Moderate-term O-J-T	All other sales and related workers[1]
636	-	-	-	-	-	**Administrative support occupations, including clerical**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
16	L	L	L	L	Short-term O-J-T	Adjustment clerks
10	L	L	L	L	Short-term O-J-T	Bill and account collectors
8	-	-	-	-	-	Insurance claims and policy processing occupations
4	VL	H	VL	VL	Long-term O-J-T	Insurance adjusters, examiners, and investigators
2	VL	H	VL	VL	Moderate-term O-J-T	Insurance claims clerks
2	VL	L	L	H	Moderate-term O-J-T	Insurance policy processing clerks
1	VL	H	VL	VL	Moderate-term O-J-T	Welfare eligibility workers and interviewers
0	VL	H	L	L	Moderate-term O-J-T	All other adjusters and investigators
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
7	-	-	-	-	-	Telephone operators
1	VL	L	VH	H	Moderate-term O-J-T	Central office operators
1	VL	L	VH	H	Moderate-term O-J-T	Directory assistance operators
6	VL	L	VH	H	Short-term O-J-T	Switchboard operators
0	VL	L	VH	H	Moderate-term O-J-T	All other communications equipment operators[1]
6	-	-	-	-	-	Computer operators and peripheral equipment operators
5	VL	L	H	L	Moderate-term O-J-T	Computer operators, except peripheral equipment
1	VL	L	H	L	Moderate-term O-J-T	Peripheral EDP equipment operators[1]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
8	VL	L	H	H	Short-term O-J-T	Hotel desk clerks[1]
3	VL	L	VH	VH	Short-term O-J-T	Interviewing clerks, except personnel and social welfare
4	VL	L	VH	VH	Work experience in a related occupation	New accounts clerks, banking
46	H	VL	H	VH	Short-term O-J-T	Receptionists and information clerks
3	VL	L	H	H	Short-term O-J-T	Reservation and transportation ticket agents and travel clerks
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3	VL	VL	H	H	Short-term O-J-T	Mail clerks, except mail machine operators and postal service
3	VL	L	VH	VH	Short-term O-J-T	Messengers
11	-	-	-	-	-	Postal clerks and mail carriers
8	VL	VH	VL	L	Short-term O-J-T	Postal mail carriers
4	VL	VH	L	VL	Short-term O-J-T	Postal service clerks

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
[illegible]									
Dispatchers	224	258	34	-	15.0	-	1.3	29	-
Dispatchers, except police, fire, and ambulance	141	168	27	L	18.9	H	2.1	19	VL
Dispatchers, police, fire, and ambulance	83	90	7	VL	8.3	L	0.0	10	VL
Meter readers, utilities[1]	57	46	-11	VL	19.5	H	1.7	10	VL
Order fillers, wholesale and retail sales	215	231	16	L	7.7	L	0.0	38	L
Procurement clerks	57	52	-5	VL	-9.5	VL	0.0	11	VL
Production, planning, and expediting clerks	239	251	12	VL	5.0	VL	1.7	39	L
Stock clerks	1,759	1,800	41	L	2.3	VL	0.1	347	VH
Traffic, shipping, and receiving clerks	798	827	29	L	3.6	VL	0.0	163	H
Weighers, measurers, checkers, and samplers, recordkeeping	45	46	1	VL	2.5	VL	0.0	11	VL
All other material recording, scheduling, and distribution workers[1]	161	177	16	L	9.6	L	0.0	34	VL
[illegible]									
Advertising clerks[1]	17	18	1	VL	5.1	VL	0.0	3	VL
Brokerage clerks	73	73	1	VL	1.0	VL	0.0	17	VL
Correspondence clerks[1]	29	27	-2	VL	-7.5	VL	0.0	5	VL
File clerks	278	236	-42	VL	15.1	L	0.7	88	L
Financial records processing occupations	2,757	2,506	-250	-	-9.1	-	8.7	433	-
Billing, cost, and rate clerks[1]	323	328	5	VL	1.6	VL	0.0	67	L
Billing, posting, and calculating machine operators[1]	96	32	-64	VL	66.7	VH	0.0	17	VL
Bookkeeping, accounting, and auditing clerks	2,181	2,003	-178	VL	-8.2	VL	11.0	327	H
Payroll and timekeeping clerks	157	144	-14	VL	-8.6	VL	0.6	20	VL
Library assistants and bookmobile drivers	121	127	7	VL	5.5	VL	0.0	33	VL
Order clerks, materials, merchandise, and service	310	337	27	L	8.7	L	0.3	56	L
Personnel clerks, except payroll and timekeeping[1]	123	98	-26	VL	20.9	H	0.0	9	VL
Statement clerks	25	16	-9	VL	37.7	VH	4.0	5	VL
[illegible]									
Secretaries	3,349	3,739	390	-	11.7	-	2.4	523	-
Legal secretaries	281	350	68	L	24.3	VH	0.0	50	L
Medical secretaries	226	281	55	L	24.5	VH	0.0	40	L
Secretaries, except legal and medical	2,842	3,109	267	H	9.4	L	2.8	434	VH
Stenographers[1]	105	102	-3	VL	-2.7	VL	19.9	14	VL
Typists and word processors	646	434	-212	VL	32.8	VH	3.9	120	L
[illegible]									
Bank tellers	559	407	-152	VL	27.3	VH	0.0	109	L
Clerical supervisors and managers[1]	1,340	1,600	261	H	19.5	H	0.1	144	H
Court clerks	51	59	8	VL	14.8	L	0.0	9	VL
Credit authorizers, credit checkers, and loan and credit clerks	258	267	9	-	3.6	-	1.2	46	-
Credit authorizers	15	19	4	VL	24.3	VH	0.0	3	VL
Credit checkers	40	35	-6	VL	14.2	L	0.0	6	VL
Loan and credit clerks	187	196	10	VL	5.3	VL	0.0	34	VL
Loan interviewers	16	17	2	VL	9.7	L	19.1	3	VL
Customer service representatives, utilities	150	179	29	L	19.0	H	0.0	30	VL
Data entry keyers, except composing	395	370	-25	VL	-6.4	VL	1.0	97	L
Data entry keyers, composing	19	6	-13	VL	66.6	VH	0.0	3	VL
Duplicating, mail, and other office machine operators[1]	222	166	-56	VL	25.4	VH	0.0	53	L
General office clerks	2,946	3,071	126	H	4.3	VL	0.5	661	VH
Municipal clerks	22	21	-1	VL	-2.8	VL	0.0	3	VL
Proofreaders and copy markers[1]	26	20	-5	VL	20.3	H	0.0	5	VL
Real estate clerks	24	25	1	VL	5.5	VL	0.0	5	VL
Statistical clerks	75	68	-7	VL	-9.6	VL	0.0	5	VL
Teacher aides and educational assistants	932	1,296	364	VH	39.0	VH	0.0	363	VH
All other clerical and administrative support workers	721	698	-23	VL	-3.2	VL	1.8	106	L
Service occupations	20,239	24,832	4,593	-	22.7	-	5.9	6,335	-
[illegible]									

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
[illegible]						[illegible]
6	-	-	-	-	-	Dispatchers
4	VL	L	L	L	Moderate-term O-J-T	Dispatchers, except police, fire, and ambulance
2	VL	L	L	L	Moderate-term O-J-T	Dispatchers, police, fire, and ambulance
1	VL	L	H	L	Short-term O-J-T	Meter readers, utilities[1]
6	VL	H	L	L	Short-term O-J-T	Order fillers, wholesale and retail sales
1	VL	L	H	L	Short-term O-J-T	Procurement clerks
5	VL	H	L	H	Short-term O-J-T	Production, planning, and expediting clerks
40	H	L	H	L	Short-term O-J-T	Stock clerks
14	L	L	H	L	Short-term O-J-T	Traffic, shipping, and receiving clerks
1	VL	L	H	L	Short-term O-J-T	Weighers, measurers, checkers, and samplers, recordkeeping
4	VL	L	L	L	Short-term O-J-T	All other material recording, scheduling, and distribution workers[1]
[illegible]						[illegible]
0	VL	H	L	L	Short-term O-J-T	Advertising clerks[1]
1	VL	L	L	H	Short-term O-J-T	Brokerage clerks
1	VL	H	L	L	Short-term O-J-T	Correspondence clerks[1]
9	L	VL	VH	VH	Short-term O-J-T	File clerks
52	-	-	-	-	-	Financial records processing occupations
9	VL	H	L	L	Short-term O-J-T	Billing, cost, and rate clerks[1]
4	VL	H	L	L	Short-term O-J-T	Billing, posting, and calculating machine operators[1]
36	H	L	L	VH	Moderate-term O-J-T	Bookkeeping, accounting, and auditing clerks
3	VL	L	VL	L	Short-term O-J-T	Payroll and timekeeping clerks
5	VL	L	H	VH	Short-term O-J-T	Library assistants and bookmobile drivers
9	VL	H	L	L	Short-term O-J-T	Order clerks, materials, merchandise, and service
2	VL	H	L	VL	Short-term O-J-T	Personnel clerks, except payroll and timekeeping[1]
0	VL	L	L	H	Short-term O-J-T	Statement clerks
[illegible]						[illegible]
100	-	-	-	-	-	Secretaries
12	L	L	L	H	Postsecondary vocational training	Legal secretaries
9	L	L	L	H	Postsecondary vocational training	Medical secretaries
79	VH	L	L	H	Postsecondary vocational training	Secretaries, except legal and medical
2	VL	L	L	H	Postsecondary vocational training	Stenographers[1]
10	L	L	H	H	Moderate-term O-J-T	Typists and word processors
[illegible]						[illegible]
22	L	VL	L	VH	Short-term O-J-T	Bank tellers
56	H	H	VL	VL	Work experience in a related occupation	Clerical supervisors and managers[1]
1	VL	H	L	L	Short-term O-J-T	Court clerks
4	-	-	-	-	-	Credit authorizers, credit checkers, and loan and credit clerks
0	VL	H	L	L	Short-term O-J-T	Credit authorizers
0	VL	L	L	L	Short-term O-J-T	Credit checkers
3	VL	L	L	L	Short-term O-J-T	Loan and credit clerks
0	VL	L	L	L	Short-term O-J-T	Loan interviewers
6	VL	H	L	L	Short-term O-J-T	Customer service representatives, utilities
2	VL	L	H	H	Postsecondary vocational training	Data entry keyers, except composing
0	VL	L	H	H	Postsecondary vocational training	Data entry keyers, composing
9	L	H	VH	H	Short-term O-J-T	Duplicating, mail, and other office machine operators[1]
83	VH	L	H	H	Short-term O-J-T	General office clerks
0	VL	H	L	L	Short-term O-J-T	Municipal clerks
1	VL	L	L	H	Short-term O-J-T	Proofreaders and copy markers[1]
1	VL	L	H	H	Short-term O-J-T	Real estate clerks
1	VL	L	VL	VL	Moderate-term O-J-T	Statistical clerks
44	H	VL	L	VH	Short-term O-J-T	Teacher aides and educational assistants
6	VL	H	L	L	Short-term O-J-T	All other clerical and administrative support workers
895	-	-	-	-	-	Service occupations
[illegible]						[illegible]

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Institutional cleaning supervisors	125	147	22	L	17.9	H	1.8	15	VL
Janitors and cleaners, including maids and housekeeping cleaners	3,043	3,602	559	VH	18.4	H	5.6	819	VH
Pest controllers and assistants[1]	56	76	20	L	35.7	VH	7.1	17	VL
All other cleaning and building service workers[1]	226	245	19	L	8.5	L	4.0	56	L
[illegible]									
Chefs, cooks, and other kitchen workers	3,237	3,739	502	-	15.5	-	2.1	1,216	-
Cooks, except short order	1,286	1,492	206	-	16.0	-	4.2	408	-
Bakers, bread and pastry	170	230	60	L	35.1	VH	8.2	61	L
Cooks, institution or cafeteria	412	435	23	L	5.5	VL	0.0	120	L
Cooks, restaurant	704	827	123	H	17.5	H	5.7	225	H
Cooks, short order and fast food	760	869	109	H	14.3	L	1.2	237	H
Food preparation workers	1,190	1,378	187	H	15.7	H	0.3	573	VH
Food and beverage service occupations	4,514	5,051	537	-	11.9	-	0.7	1,755	-
Bartenders	373	347	-25	VL	-6.8	VL	3.0	103	L
Dining room and cafeteria attendants and bar helpers	416	416	0	VL	0.0	VL	0.2	133	L
Food counter, fountain, and related workers	1,630	1,669	40	L	2.5	VL	0.1	727	VH
Hosts and hostesses, restaurant, lounge, or coffee shop	248	292	44	L	17.8	H	2.0	69	L
Waiters and waitresses	1,847	2,326	479	VH	25.9	VH	0.6	714	VH
All other food preparation and service workers	213	267	54	L	25.3	VH	0.5	83	L
[illegible]									
Ambulance drivers and attendants, except EMTs	18	21	3	VL	14.9	L	0.0	4	VL
Dental assistants	190	269	79	L	41.9	VH	0.0	45	L
Medical assistants	206	327	121	H	59.0	VH	0.0	35	VL
Nursing aides and psychiatric aides	1,370	1,770	400	-	29.2	-	1.5	327	-
Nursing aides, orderlies, and attendants	1,265	1,652	387	VH	30.6	VH	1.7	305	H
Psychiatric aides	105	118	13	VL	12.2	L	0.0	22	VL
Occupational therapy assistants and aides	16	29	13	VL	82.1	VH	0.0	4	VL
Pharmacy assistants	52	64	12	VL	23.3	H	0.0	8	VL
Physical and corrective therapy assistants and aides	78	142	64	L	83.1	VH	0.0	26	VL
All other health service workers	157	224	67	L	42.6	VH	0.0	42	L
[illegible]									
Amusement and recreation attendants	267	406	139	H	52.0	VH	0.7	130	L
Baggage porters and bellhops[1]	35	44	9	VL	26.2	VH	0.0	11	VL
Barbers[1]	64	60	-4	VL	-6.4	VL	76.2	4	VL
Child care workers	757	1,005	248	H	32.8	VH	57.5	328	H
Cosmetologists and related workers	645	754	109	-	16.9	-	44.7	101	-
Hairdressers, hairstylists, and cosmetologists	595	677	82	L	13.8	L	46.0	90	L
Manicurists	38	64	26	L	69.5	VH	37.3	9	VL
Shampooers	12	13	1	VL	7.9	L	0.0	2	VL
Flight attendants	105	135	30	L	28.5	VH	1.0	10	VL
[illegible]									
Home health aides	420	848	428	VH	2.0	VL	3.3	156	H
Personal and home care aides	179	391	212	H	18.7	H	0.0	58	L
Ushers, lobby attendants, and ticket takers[1]	59	77	17	L	29.4	VH	0.0	25	VL
Private household workers	808	682	-126	-	15.6	-	0.0	234	-
Child care workers, private household	283	278	-5	VL	-1.9	VL	0.0	147	H
Cleaners and servants, private household[1]	496	387	-108	VL	21.9	H	0.0	89	L
Cooks, private household[1]	9	5	-4	VL	49.2	VH	0.0	1	VL
Housekeepers and butlers[1]	20	12	-7	VL	37.5	VH	0.0	3	VL
[illegible]									
Firefighting occupations	284	329	45	-	15.7	-	0.0	14	-
Fire fighters	219	258	40	L	18.2	H	0.0	13	VL
Fire fighting and prevention supervisors[1]	52	56	4	VL	7.3	VL	0.0	0	VL
Fire inspection occupations[1]	13	14	1	VL	7.1	VL	0.0	1	VL
Law enforcement occupations	992	1,316	324	-	32.7	-	0.0	83	-
Correction officers	310	468	158	H	50.9	VH	0.0	48	L
Police and detectives	682	848	166	-	24.4	-	0.0	36	-
Police and detective supervisors[1]	87	93	6	VL	6.9	VL	0.0	1	VL

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
5	VL	L	L	VL	Work experience in a related occupation	Institutional cleaning supervisors
104	VH	VL	VH	VH	Short-term O-J-T	Janitors and cleaners, including maids and housekeeping cleaners
3	VL	VL	VH	H	Moderate-term O-J-T	Pest controllers and assistants[1]
6	VL	VL	VH	H	Short-term O-J-T	All other cleaning and building service workers[1]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
100	-	-	-	-	-	Chefs, cooks, and other kitchen workers
48	-	-	-	-	-	Cooks, except short order
9	L	VL	VH	VH	Moderate-term O-J-T	Bakers, bread and pastry
11	L	VL	VH	VH	Long-term O-J-T	Cooks, institution or cafeteria
27	L	VL	VH	VH	Long-term O-J-T	Cooks, restaurant
27	L	VL	VH	VH	Short-term O-J-T	Cooks, short order and fast food
26	L	VL	VH	VH	Short-term O-J-T	Food preparation workers
206	-	-	-	-	-	Food and beverage service occupations
13	L	VL	VH	VH	Short-term O-J-T	Bartenders
14	L	VL	VH	VH	Short-term O-J-T	Dining room and cafeteria attendants and bar helpers
42	H	VL	VH	VH	Short-term O-J-T	Food counter, fountain, and related workers
10	L	L	H	VH	Short-term O-J-T	Hosts and hostesses, restaurant, lounge, or coffee shop
126	VH	VL	VH	VH	Short-term O-J-T	Waiters and waitresses
12	L	VL	VH	VH	Short-term O-J-T	All other food preparation and service workers
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1	VL	VL	L	VH	Short-term O-J-T	Ambulance drivers and attendants, except EMTs
12	L	L	L	VH	Moderate-term O-J-T	Dental assistants
14	L	L	VL	H	Moderate-term O-J-T	Medical assistants
54	-	-	-	-	-	Nursing aides and psychiatric aides
51	H	VL	H	H	Short-term O-J-T	Nursing aides, orderlies, and attendants
3	VL	VL	H	H	Short-term O-J-T	Psychiatric aides
1	VL	L	VL	H	Moderate-term O-J-T	Occupational therapy assistants and aides
2	VL	L	VL	H	Short-term O-J-T	Pharmacy assistants
8	VL	VL	L	VH	Moderate-term O-J-T	Physical and corrective therapy assistants and aides
10	L	VL	L	VH	Short-term O-J-T	All other health service workers
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
19	L	L	VH	VH	Short-term O-J-T	Amusement and recreation attendants
1	VL	VL	H	VH	Short-term O-J-T	Baggage porters and bellhops[1]
2	VL	VL	VL	H	Postsecondary vocational training	Barbers[1]
29	H	VL	H	VH	Short-term O-J-T	Child care workers
25	-	-	-	-	-	Cosmetologists and related workers
21	L	VL	VL	VH	Postsecondary vocational training	Hairdressers, hairstylists, and cosmetologists
3	VL	VL	VL	VH	Postsecondary vocational training	Manicurists
0	VL	VL	VL	VH	Short-term O-J-T	Shampooers
4	VL	H	VL	VH	Long-term O-J-T	Flight attendants
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
44	H	VL	H	H	Short-term O-J-T	Home health aides
24	L	VL	VH	VH	Short-term O-J-T	Personal and home care aides
3	VL	L	VH	VH	Short-term O-J-T	Ushers, lobby attendants, and ticket takers[1]
22	-	-	-	-	-	Private household workers
13	L	VL	VH	VH	Short-term O-J-T	Child care workers, private household
9	L	VL	VH	VH	Short-term O-J-T	Cleaners and servants, private household[1]
0	VL	VL	VH	VH	Moderate-term O-J-T	Cooks, private household[1]
0	VL	VL	VH	VH	Moderate-term O-J-T	Housekeepers and butlers[1]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
15	-	-	-	-	-	Firefighting occupations
13	L	VH	VL	VL	Long-term O-J-T	Fire fighters
2	VL	VH	VL	VL	Work experience in a related occupation	Fire fighting and prevention supervisors[1]
1	VL	VH	VL	VL	Work experience in a related occupation	Fire inspection occupations[1]
55	-	-	-	-	-	Law enforcement occupations
18	L	H	VL	VL	Long-term O-J-T	Correction officers
36	-	-	-	-	-	Police and detectives
4	VL	VH	VL	VL	Work experience in a related occupation	Police and detective supervisors[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Police detectives and investigators	66	80	13	VL	20.0	H	0.0	3	VL
Police patrol officers	400	511	112	H	28.0	VH	0.0	23	VL
Sheriffs and deputy sheriffs[1]	85	110	25	L	28.9	VH	0.0	5	VL
Other law enforcement occupations[1]	43	54	11	VL	25.2	VH	0.0	4	VL
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Detectives, except public	55	79	24	L	44.3	VH	20.1	17	VL
Guards	867	1,282	415	VH	47.9	VH	0.1	283	H
Crossing guards[1]	58	60	2	VL	3.3	VL	0.0	16	VL
All other protective service workers	125	133	8	VL	6.1	VL	0.0	54	L
All other service workers[1]	1,020	1,259	240	H	23.5	H	8.0	279	H
Agriculture, forestry, fishing, and related occupations	3,762	3,650	-112	-	-3.0	-	42.7	718	-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Animal caretakers, except farm	125	158	33	L	26.4	VH	24.0	31	VL
Farm workers[1]	906	870	-36	VL	-4.0	VL	3.3	218	H
Gardening, nursery, and greenhouse and lawn service occupations	844	986	142	-	16.9	-	23.2	275	-
Gardeners and groundskeepers, except farm	569	623	54	L	9.4	L	27.9	186	H
Lawn maintenance workers	96	127	31	L	31.9	VH	0.0	37	VL
Lawn service managers[1]	36	47	12	VL	32.7	VH	58.8	5	VL
Nursery and greenhouse managers[1]	19	26	7	VL	37.5	VH	84.6	3	VL
Nursery workers[1]	83	109	26	L	31.5	VH	0.0	26	VL
Pruners	26	34	8	VL	31.9	VH	0.0	9	VL
Sprayers/applicators	15	20	5	VL	31.9	VH	0.0	6	VL
Farm operators and managers	1,327	1,050	-277	-	20.9	-	98.2	100	-
Farmers[1]	1,276	1,003	-273	VL	21.4	H	99.7	96	L
Farm managers[1]	51	46	-5	VL	-8.9	VL	9.8	4	VL
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Captains and other officers, fishing vessels[1]	7	6	-1	VL	11.2	L	42.9	0	VL
Fishers, hunters, and trappers[1]	42	41	-1	VL	-2.8	VL	64.3	2	VL
Forestry and logging occupations	124	118	-6	-	-4.8	-	23.4	24	-
Forest and conservation workers[1]	42	42	1	VL	1.4	VL	12.0	9	VL
Timber cutting and logging occupations	82	76	-7	-	-7.9	-	29.2	15	-
Fallers and buckers[1]	29	27	-3	VL	-9.1	VL	51.1	6	VL
Logging tractor operators	20	20	0	VL	-1.3	VL	0.0	3	VL
Log handling equipment operators[1]	16	15	-1	VL	-8.7	VL	18.8	3	VL
All other timber cutting and related logging workers[1]	17	15	-2	VL	13.2	L	35.9	3	VL
Supervisors, farming, forestry, and agricultural related occupations[1]	85	91	6	VL	6.7	VL	10.6	9	VL
Veterinary assistants	31	37	6	VL	19.5	H	0.0	7	VL
All other agricultural, forestry, fishing, and related workers[1]	255	278	23	L	8.9	L	1.6	72	L
Precision production, craft, and repair occupations	14,047	14,880	833	-	5.9	-	12.4	1,670	-
[illegible][1]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Construction trades	3,616	3,956	340	-	9.4	-	25.7	529	-
Bricklayers and stone masons[1]	147	162	15	L	10.0	L	27.9	27	VL
Carpenters[1]	992	1,074	82	L	8.3	L	36.8	168	H
Carpet installers	66	72	6	VL	9.2	L	66.5	6	VL
Ceiling tile installers and acoustical carpenters	16	14	-2	VL	-9.9	VL	0.0	2	VL
Concrete and terrazzo finishers	126	141	15	L	11.8	L	9.5	4	VL
Drywall installers and finishers	133	143	9	VL	7.1	VL	31.5	29	VL
Electricians[1]	528	554	26	L	4.8	VL	9.8	35	VL
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hard tile setters[1]	27	28	0	VL	1.1	VL	44.0	4	VL
Highway maintenance workers	167	182	15	L	9.1	L	0.0	18	VL
Insulation workers	64	77	13	VL	19.9	H	3.1	22	VL
Painters and paperhangers, construction and maintenance[1]	439	509	70	L	16.0	H	45.8	72	L
Paving, surfacing, and tamping equipment operators[1]	73	92	19	L	26.5	VH	1.4	13	VL
Pipelayers and pipelaying fitters	57	63	7	VL	11.9	L	5.3	6	VL

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
4	VL	VH	VL	VL	Work experience in a related occupation	Police detectives and investigators
25	L	VH	VL	VL	Long-term O-J-T	Police patrol officers
4	VL	H	VL	VL	Long-term O-J-T	Sheriffs and deputy sheriffs[1]
2	VL	H	VL	VL	Moderate-term O-J-T	Other law enforcement occupations[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	VL	L	H	H	Moderate-term O-J-T	Detectives, except public
53	H	L	H	H	Short-term O-J-T	Guards
2	VL	L	H	H	Short-term O-J-T	Crossing guards[1]
9	L	VL	VH	VH	Short-term O-J-T	All other protective service workers
44	H	L	H	VH	Work experience in a related occupation	All other service workers[1]
89	-	-	-	-	-	**Agriculture, forestry, fishing, and related occupations**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	VL	VL	L	VH	Short-term O-J-T	Animal caretakers, except farm
24	L	VL	VH	H	Short-term O-J-T	Farm workers[1]
25	-	-	-	-	-	Gardening, nursery, and greenhouse and lawn service occupations
12	L	VL	VH	H	Short-term O-J-T	Gardeners and groundskeepers, except farm
4	VL	VL	VH	H	Short-term O-J-T	Lawn maintenance workers
2	VL	L	VL	H	Work experience in a related occupation	Lawn service managers[1]
1	VL	L	VL	H	Work experience in a related occupation	Nursery and greenhouse managers[1]
5	VL	VL	VH	H	Short-term O-J-T	Nursery workers[1]
1	VL	VL	VH	H	Short-term O-J-T	Pruners
1	VL	VL	VH	H	Moderate-term O-J-T	Sprayers/applicators
20	-	-	-	-	-	Farm operators and managers
19	L	VL	VL	H	Long-term O-J-T	Farmers[1]
1	VL	VL	VL	H	Work experience, plus degree	Farm managers[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0	VL	H	VH	L	Work experience in a related occupation	Captains and other officers, fishing vessels[1]
1	VL	H	VH	L	Short-term O-J-T	Fishers, hunters, and trappers[1]
3	-	-	-	-	-	Forestry and logging occupations
1	VL	L	VH	H	Short-term O-J-T	Forest and conservation workers[1]
2	-	-	-	-	-	Timber cutting and logging occupations
1	VL	L	VH	H	Short-term O-J-T	Fallers and buckers[1]
0	VL	H	H	VL	Short-term O-J-T	Logging tractor operators
0	VL	L	VH	H	Short-term O-J-T	Log handling equipment operators[1]
0	VL	L	VH	H	Short-term O-J-T	All other timber cutting and related logging workers[1]
2	VL	L	VL	H	Work experience in a related occupation	Supervisors, farming, forestry, and agricultural related occupations[1]
1	VL	VL	L	VH	Short-term O-J-T	Veterinary assistants
7	VL	VL	VH	H	Short-term O-J-T	All other agricultural, forestry, fishing, and related workers[1]
408	-	-	-	-	-	**Precision production, craft, and repair occupations**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
108	-	-	-	-	-	Construction trades
4	VL	H	VH	L	Long-term O-J-T	Bricklayers and stone masons[1]
26	L	H	VH	L	Long-term O-J-T	Carpenters[1]
3	VL	L	H	L	Moderate-term O-J-T	Carpet installers
0	VL	H	VH	L	Moderate-term O-J-T	Ceiling tile installers and acoustical carpenters
4	VL	L	VH	L	Long-term O-J-T	Concrete and terrazzo finishers
5	VL	H	VH	L	Moderate-term O-J-T	Drywall installers and finishers
14	L	H	H	VL	Long-term O-J-T	Electricians[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	H	VH	L	Long-term O-J-T	Hard tile setters[1]
6	VL	L	VH	L	Short-term O-J-T	Highway maintenance workers
3	VL	H	VH	VL	Moderate-term O-J-T	Insulation workers
16	L	H	VH	L	Moderate-term O-J-T	Painters and paperhangers, construction and maintenance[1]
3	VL	H	VH	L	Moderate-term O-J-T	Paving, surfacing, and tamping equipment operators[1]
2	VL	L	VH	L	Moderate-term O-J-T	Pipelayers and pipelaying fitters

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Plasterers[1]	30	33	3	VL	11.4	L	20.1	5	VL
Plumbers, pipefitters, and steamfitters[1]	375	390	15	L	4.0	VL	19.7	47	L
Roofers	126	143	17	L	13.2	L	30.9	39	L
Structural and reinforcing metal workers[1]	61	64	3	VL	5.1	VL	0.0	10	VL
All other construction trades workers[1]	155	181	26	L	16.6	H	20.7	19	VL
[illegible]									
Oil and gas extraction occupations	66	39	-27	-	40.7	-	0.0	10	-
Roustabouts[1]	29	13	-16	VL	55.0	VH	0.0	4	VL
All other oil and gas extraction occupations[1]	36	25	-11	VL	30.0	VH	0.0	6	VL
Mining, quarrying, and tunneling occupations[1]	18	12	-6	VL	33.9	VH	0.0	3	VL
All other extraction and related workers[1]	136	153	17	L	12.5	L	1.5	27	VL
[illegible]									
Communications equipment mechanics, installers, and repairers	118	78	-41	-	34.5	-	5.1	2	-
Central office and PBX installers and repairers	84	51	-33	VL	39.1	VH	7.1	0	VL
Radio mechanics	7	6	-1	VL	16.2	H	0.0	1	VL
All other communications equipment mechanics, installers, and repairers	27	20	-7	VL	25.2	VH	0.0	2	VL
[illegible]									
Data processing equipment repairers	75	104	29	L	38.2	VH	10.6	9	VL
Electrical powerline installers and repairers	112	123	11	VL	9.8	L	0.9	6	VL
Electronic home entertainment equipment repairers	34	30	-3	VL	-10.0	VL	28.7	4	VL
Electronics repairers, commercial and industrial equipment	66	66	1	VL	2.0	VL	12.1	9	VL
Station installers and repairers, telephone	37	11	-26	VL	70.4	VH	0.0	0	VL
Telephone and cable TV line installers and repairers[1]	191	181	-9	VL	-4.9	VL	0.0	0	VL
All other electrical and electronic equipment mechanics, installers, and repairers	39	38	-1	VL	-3.3	VL	0.0	3	VL
[illegible]									
Industrial machinery mechanics[1]	464	502	38	L	8.1	L	3.0	39	L
Maintenance repairers, general utility	1,273	1,505	231	H	18.2	H	2.2	192	H
Millwrights	77	66	-11	VL	14.8	L	1.3	9	VL
[illegible]									
Aircraft mechanics, including engine specialists	119	134	15	-	12.6	-	1.7	7	-
Aircraft engine specialists	23	25	2	VL	7.9	L	8.7	1	VL
Aircraft mechanics[1]	96	109	13	VL	13.7	L	0.0	6	VL
Automotive body and related repairers	209	243	35	L	16.7	H	21.1	29	VL
Automotive mechanics[1]	736	862	126	H	17.1	H	21.6	118	L
Bus and truck mechanics and diesel engine specialists	250	293	42	L	16.9	H	4.8	23	VL
Farm equipment mechanics[1]	41	47	6	VL	13.8	L	9.7	6	VL
Mobile heavy equipment mechanics	101	110	9	VL	8.7	L	4.9	14	VL
Motorcycle, boat, and small engine mechanics	46	48	2	-	3.8	-	32.6	6	-
Motorcycle repairers[1]	11	12	0	VL	3.8	VL	28.8	1	VL
Small engine specialists[1]	35	36	1	VL	3.8	VL	34.5	4	VL
[illegible]									
Bicycle repairers	40	44	4	VL	10.2	L	70.3	6	VL
Camera and photographic equipment repairers[1]	11	12	1	VL	9.3	L	45.2	1	VL
Coin and vending machine servicers and repairers	19	17	-3	VL	14.1	L	0.0	2	VL
Electric meter installers and repairers[1]	12	10	-2	VL	18.1	H	0.0	1	VL
Electromedical and biomedical equipment repairers	10	11	2	VL	17.3	H	0.0	1	VL
Elevator installers and repairers[1]	24	28	4	VL	15.5	L	0.0	3	VL
Heat, air conditioning, and refrigeration mechanics and installers	233	299	66	L	28.5	VH	12.9	23	VL
[illegible]									
Locksmiths and safe repairers[1]	20	21	2	VL	9.8	L	30.8	2	VL
Musical instrument repairers and tuners[1]	10	11	1	VL	15.0	L	61.8	1	VL
Office machine and cash register servicers[1]	59	63	4	VL	6.4	VL	6.8	1	VL

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
1	VL	H	VH	L	Long-term O-J-T	Plasterers[1]
8	VL	H	H	VL	Long-term O-J-T	Plumbers, pipefitters, and steamfitters[1]
4	VL	L	VH	L	Moderate-term O-J-T	Roofers
2	VL	H	VH	VL	Long-term O-J-T	Structural and reinforcing metal workers[1]
6	VL	L	VH	L	Moderate-term O-J-T	All other construction trades workers[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	-	-	-	-	-	Oil and gas extraction occupations
0	VL	VH	VH	VL	Short-term O-J-T	Roustabouts[1]
1	VL	VH	VH	VL	Moderate-term O-J-T	All other oil and gas extraction occupations[1]
0	VL	VH	VH	VL	Long-term O-J-T	Mining, quarrying, and tunneling occupations[1]
4	VL	VH	VH	VL	Moderate-term O-J-T	All other extraction and related workers[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2	-	-	-	-	-	Communications equipment mechanics, installers, and repairers
2	VL	VH	L	VL	Postsecondary vocational training	Central office and PBX installers and repairers
0	VL	H	H	VL	Postsecondary vocational training	Radio mechanics
1	VL	VH	L	VL	Postsecondary vocational training	All other communications equipment mechanics, installers, and repairers
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	VL	H	L	VL	Postsecondary vocational training	Data processing equipment repairers
3	VL	VH	VL	VL	Long-term O-J-T	Electrical powerline installers and repairers
1	VL	H	H	VL	Postsecondary vocational training	Electronic home entertainment equipment repairers
2	VL	H	H	VL	Postsecondary vocational training	Electronics repairers, commercial and industrial equipment
1	VL	VH	L	VL	Postsecondary vocational training	Station installers and repairers, telephone
4	VL	VH	L	VL	Long-term O-J-T	Telephone and cable TV line installers and repairers[1]
1	VL	H	L	VL	Postsecondary vocational training	All other electrical and electronic equipment mechanics, installers, and repairers
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
16	L	H	VL	VL	Long-term O-J-T	Industrial machinery mechanics[1]
46	H	H	H	L	Long-term O-J-T	Maintenance repairers, general utility
2	VL	VH	H	VL	Long-term O-J-T	Millwrights
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	-	-	-	-	-	Aircraft mechanics, including engine specialists
1	VL	VH	L	VL	Postsecondary vocational training	Aircraft engine specialists
4	VL	VH	L	VL	Postsecondary vocational training	Aircraft mechanics[1]
8	VL	H	L	L	Long-term O-J-T	Automotive body and related repairers
32	H	H	H	VL	Long-term O-J-T	Automotive mechanics[1]
9	L	H	L	VL	Long-term O-J-T	Bus and truck mechanics and diesel engine specialists
2	VL	H	L	VL	Long-term O-J-T	Farm equipment mechanics[1]
3	VL	H	L	VL	Long-term O-J-T	Mobile heavy equipment mechanics
1	-	-	-	-	-	Motorcycle, boat, and small engine mechanics
0	VL	H	L	VL	Long-term O-J-T	Motorcycle repairers[1]
1	VL	H	L	VL	Long-term O-J-T	Small engine specialists[1]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	H	H	L	Moderate-term O-J-T	Bicycle repairers
0	VL	H	L	L	Moderate-term O-J-T	Camera and photographic equipment repairers[1]
0	VL	H	H	L	Long-term O-J-T	Coin and vending machine servicers and repairers
0	VL	H	L	L	Long-term O-J-T	Electric meter installers and repairers[1]
0	VL	H	H	L	Long-term O-J-T	Electromedical and biomedical equipment repairers
1	VL	H	L	L	Long-term O-J-T	Elevator installers and repairers[1]
11	L	H	L	VL	Long-term O-J-T	Heat, air conditioning, and refrigeration mechanics and installers
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	VL	H	L	L	Moderate-term O-J-T	Locksmiths and safe repairers[1]
0	VL	H	L	L	Long-term O-J-T	Musical instrument repairers and tuners[1]
3	VL	H	VL	VL	Long-term O-J-T	Office machine and cash register servicers[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Precision instrument repairers[1]	40	40	0	VL	-0.3	VL	0.0	4	VL
Riggers	11	11	0	VL	-4.1	VL	0.0	1	VL
Tire repairers and changers	89	95	6	VL	7.0	VL	2.3	38	VL
Watchmakers[1]	6	5	-1	VL	15.4	L	48.8	1	VL
All other mechanics, installers, and repairers[1]	371	412	42	L	11.3	L	2.2	34	VL
Assemblers, precision	324	315	-9	-	-2.9	-	0.0	41	-
Aircraft assemblers, precision[1]	20	19	-2	VL	-8.1	VL	0.0	2	VL
Electrical and electronic equipment assemblers, precision	144	127	-17	VL	11.7	L	0.0	21	VL
Electromechanical equipment assemblers, precision	47	44	-3	VL	-6.0	VL	0.0	7	VL
Fitters, structural metal, precision[1]	14	9	-5	VL	34.6	VH	0.0	1	VL
Machine builders and other precision machine assemblers[1]	56	50	6	VL	10.8	L	0.0	5	VL
All other precision assemblers[1]	40	50	11	VL	28.4	VH	0.0	5	VL
Bakers, manufacturing	36	40	4	VL	11.8	L	0.0	7	VL
Butchers and meatcutters	219	202	-17	VL	-7.8	VL	2.7	33	VL
All other precision food and tobacco workers[1]	38	39	2	VL	4.2	VL	2.6	6	VL
Inspectors, testers, and graders, precision[1]	654	629	-25	VL	-3.9	VL	0.8	67	L
Metal workers, precision	885	824	-61	-	-6.9	-	4.2	78	-
Boilermakers[1]	20	19	-1	VL	-4.0	VL	0.0	2	VL
Jewelers and silversmiths[1]	30	32	2	VL	6.1	VL	39.6	3	VL
Machinists[1]	369	349	-20	VL	-5.4	VL	2.7	28	VL
Sheet metal workers and duct installers[1]	222	205	-17	VL	-7.8	VL	2.7	35	VL
Shipfitters[1]	12	11	-1	VL	10.0	L	0.0	1	VL
Tool and die makers[1]	142	127	-15	VL	10.7	L	1.4	5	VL
All other precision metal workers[1]	90	82	-8	VL	-9.1	VL	7.8	7	VL
Bookbinders[1]	6	6	0	VL	-3.8	VL	0.0	1	VL
Prepress printing workers, precision	131	132	1	-	0.8	-	2.3	16	-
Compositors and typesetters, precision[1]	11	8	-2	VL	22.8	H	28.0	1	VL
Job printers[1]	14	11	-4	VL	28.8	VH	0.0	1	VL
Paste-up workers[1]	22	16	-6	VL	27.8	VH	0.0	2	VL
Electronic pagination systems workers[1]	18	33	15	L	82.8	VH	0.0	4	VL
Photoengravers[1]	7	5	-1	VL	19.7	H	0.0	1	VL
Camera operators[1]	15	14	-1	VL	-6.1	VL	0.0	2	VL
Strippers, printing[1]	31	34	3	VL	8.9	L	0.0	4	VL
Platemakers[1]	13	11	-2	VL	15.3	L	0.0	2	VL
All other printing workers, precision[1]	13	19	6	VL	44.1	VH	7.5	3	VL
Custom tailors and sewers[1]	84	63	-21	VL	24.6	VH	51.1	7	VL
Patternmakers and layout workers, fabric and apparel[1]	17	23	5	VL	31.0	VH	0.0	3	VL
Shoe and leather workers and repairers, precision[1]	24	17	-7	VL	27.6	VH	29.5	2	VL
Upholsterers[1]	63	64	1	VL	1.0	VL	34.7	5	VL
All other precision textile, apparel, and furnishings workers[1]	51	51	0	VL	-0.4	VL	5.9	10	VL
Woodworkers, precision	241	277	36	-	15.0	-	18.3	21	-
Cabinetmakers and bench carpenters[1]	131	151	20	L	15.2	L	23.6	6	VL
Furniture finishers[1]	38	40	2	VL	6.4	VL	34.3	7	VL
Wood machinists[1]	50	59	10	VL	19.3	H	0.0	2	VL
All other precision woodworkers[1]	22	26	4	VL	19.2	H	0.0	5	VL
Dental laboratory technicians, precision[1]	49	47	-2	VL	-4.8	VL	20.2	4	VL
Optical goods workers, precision[1]	19	22	2	VL	12.3	L	0.0	2	VL
Photographic process workers, precision	14	16	2	VL	15.1	L	38.3	3	VL
All other precision workers[1]	117	119	3	VL	2.2	VL	4.3	17	VL
Chemical plant and system operators[1]	37	36	-1	VL	-2.7	VL	0.0	2	VL
Electric power generating plant operators, distributors, and dispatchers	43	42	-1	-	-3.5	-	0.0	2	-

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
1	VL	H	L	L	Long-term O-J-T	Precision instrument repairers[1]
0	VL	H	H	L	Long-term O-J-T	Riggers
4	VL	VL	VH	H	Short-term O-J-T	Tire repairers and changers
0	VL	H	L	L	Long-term O-J-T	Watchmakers[1]
11	L	H	L	VL	Long-term O-J-T	All other mechanics, installers, and repairers[1]
						[illegible]
8	-	-	-	-	-	Assemblers, precision
0	VL	H	L	VL	Work experience in a related occupation	Aircraft assemblers, precision[1]
3	VL	L	H	VL	Work experience in a related occupation	Electrical and electronic equipment assemblers, precision
1	VL	L	H	VL	Work experience in a related occupation	Electromechanical equipment assemblers, precision
0	VL	H	L	VL	Work experience in a related occupation	Fitters, structural metal, precision[1]
2	VL	H	L	VL	Work experience in a related occupation	Machine builders and other precision machine assemblers[1]
2	VL	H	L	VL	Work experience in a related occupation	All other precision assemblers[1]
						[illegible]
1	VL	L	H	H	Moderate-term O-J-T	Bakers, manufacturing
5	VL	L	L	L	Long-term O-J-T	Butchers and meatcutters
1	VL	L	H	L	Long-term O-J-T	All other precision food and tobacco workers[1]
13	L	H	H	VL	Work experience in a related occupation	Inspectors, testers, and graders, precision[1]
17	-	-	-	-	-	Metal workers, precision
0	VL	H	L	VL	Long-term O-J-T	Boilermakers[1]
1	VL	H	L	VL	Long-term O-J-T	Jewelers and silversmiths[1]
7	VL	H	L	VL	Long-term O-J-T	Machinists[1]
4	VL	H	H	VL	Moderate-term O-J-T	Sheet metal workers and duct installers[1]
0	VL	H	L	VL	Long-term O-J-T	Shipfitters[1]
3	VL	VH	L	VL	Long-term O-J-T	Tool and die makers[1]
2	VL	H	L	VL	Long-term O-J-T	All other precision metal workers[1]
						[illegible]
0	VL	L	H	VL	Moderate-term O-J-T	Bookbinders[1]
4	-	-	-	-	-	Prepress printing workers, precision
0	VL	H	VH	H	Long-term O-J-T	Compositors and typesetters, precision[1]
0	VL	H	H	VL	Long-term O-J-T	Job printers[1]
0	VL	H	VH	H	Long-term O-J-T	Paste-up workers[1]
2	VL	H	VH	H	Long-term O-J-T	Electronic pagination systems workers[1]
0	VL	H	H	VL	Long-term O-J-T	Photoengravers[1]
0	VL	H	H	VL	Long-term O-J-T	Camera operators[1]
1	VL	H	H	VL	Long-term O-J-T	Strippers, printing[1]
0	VL	H	H	VL	Long-term O-J-T	Platemakers[1]
1	VL	H	H	VL	Long-term O-J-T	All other printing workers, precision[1]
						[illegible]
1	VL	VL	H	H	Work experience in a related occupation	Custom tailors and sewers[1]
1	VL	VL	H	H	Long-term O-J-T	Patternmakers and layout workers, fabric and apparel[1]
0	VL	VL	H	H	Long-term O-J-T	Shoe and leather workers and repairers, precision[1]
1	VL	VL	H	H	Long-term O-J-T	Upholsterers[1]
1	VL	VL	VH	H	Long-term O-J-T	All other precision textile, apparel, and furnishings workers[1]
8	-	-	-	-	-	Woodworkers, precision
4	VL	L	L	VL	Long-term O-J-T	Cabinetmakers and bench carpenters[1]
1	VL	L	L	L	Long-term O-J-T	Furniture finishers[1]
2	VL	L	L	VL	Long-term O-J-T	Wood machinists[1]
1	VL	L	L	L	Long-term O-J-T	All other precision woodworkers[1]
						[illegible]
1	VL	L	L	H	Long-term O-J-T	Dental laboratory technicians, precision[1]
1	VL	L	L	L	Long-term O-J-T	Optical goods workers, precision[1]
1	VL	VL	H	H	Long-term O-J-T	Photographic process workers, precision
3	VL	L	H	VL	Long-term O-J-T	All other precision workers[1]
						[illegible]
1	VL	VH	VL	VL	Long-term O-J-T	Chemical plant and system operators[1]
1	-	-	-	-	-	Electric power generating plant operators, distributors, and dispatchers

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
Power distributors and dispatchers	18	15	-2	VL	13.6	L	0.0	1	VL
Power generating and reactor plant operators	26	26	1	VL	3.6	VL	0.0	1	VL
Gas and petroleum plant and system occupations[1]	31	28	-3	VL	10.5	L	0.0	1	VL
Stationary engineers	30	27	-3	VL	10.3	L	3.3	1	VL
Water and liquid waste treatment plant and system operators[1]	95	104	9	VL	9.5	L	0.0	5	VL
All other plant and system operators[1]	93	97	4	VL	4.7	VL	0.0	5	VL
Operators, fabricators, and laborers	17,142	17,899	757	-	4.4	-	3.6	3,251	-
[illegible]									
Numerical control machine tool operators and tenders, metal and plastic[1]	75	94	20	L	26.5	VH	0.0	13	VL
Combination machine tool setters, set-up operators, operators, and tenders[1]	106	123	17	L	16.1	H	0.0	16	VL
Machine tool cut and form setters, operators, and tenders, metal and plastic	709	593	-116	-	16.3	-	0.7	75	-
Drilling and boring machine tool setters and set-up operators, metal and plastic[1]	45	30	-16	VL	34.9	VH	0.0	5	VL
Grinding machine setters and set-up operators, metal and plastic	64	52	-12	VL	18.4	H	6.2	9	VL
Lathe and turning machine tool setters and set-up operators, metal and plastic[1]	71	50	-22	VL	30.6	VH	0.0	8	VL
Machine forming operators and tenders, metal and plastic	171	151	-19	VL	11.3	L	0.0	13	VL
Machine tool cutting operators and tenders, metal and plastic	119	85	-34	VL	28.9	VH	0.0	13	VL
Punching machine setters and set-up operators, metal and plastic	48	37	-10	VL	21.2	H	0.0	5	VL
All other machine tool cutting and forming operatives[1]	191	188	-2	VL	-1.3	VL	0.5	22	VL
[illegible]									
Metal fabricators, structural metal products[1]	44	43	-1	VL	-2.6	VL	0.0	6	VL
Soldering and brazing machine operators and tenders[1]	10	8	-2	VL	17.1	H	0.0	1	VL
Welding machine setters, operators, and tenders	103	87	-16	VL	15.7	H	0.0	11	VL
[illegible]									
Electrolytic plating machine operators and tenders, setters and set-up operators, metal and plastic[1]	42	45	2	VL	5.7	VL	0.0	7	VL
Foundry mold assembly and shakeout workers	10	8	-2	VL	23.4	H	9.6	1	VL
Furnace operators and tenders	20	19	-2	VL	-8.4	VL	0.0	2	VL
Heat treating machine operators and tenders, metal and plastic[1]	20	17	-2	VL	11.5	L	0.0	3	VL
Metal molding machine operators and tenders, setters and set-up operators	40	40	0	VL	0.3	VL	0.0	3	VL
Plastic molding machine operators and tenders, setters and set-up operators	165	177	12	VL	7.4	VL	0.0	15	VL
All other metal and plastic machine setters, operators, and related workers[1]	127	137	10	VL	8.1	L	0.0	20	VL
[illegible]									
Bindery machine operators and set-up operators[1]	72	77	5	VL	6.6	VL	0.0	10	VL
Prepress printing workers, production	25	9	-16	-	63.6	-	0.0	2	-
Photoengraving and lithographic machine operators and tenders[1]	5	3	-2	VL	32.2	VH	0.0	0	VL
Typesetting and composing machine operators and tenders[1]	20	6	-14	VL	71.1	VH	0.0	1	VL
Printing press operators	218	223	5	-	2.3	-	4.1	21	-
Letterpress operators	14	4	-10	VL	71.3	VH	0.0	1	VL
Offset lithographic press operators	79	84	5	VL	6.5	VL	5.1	8	VL
Printing press machine setters, operators and tenders	113	119	6	VL	5.7	VL	0.0	11	VL
All other printing press setters and set-up operators	13	16	3	VL	24.0	VH	39.9	1	VL
[illegible]									
All other printing, binding, and related workers[1]	43	48	5	VL	10.4	L	0.0	6	VL

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
0	VL	VH	VL	VL	Long-term O-J-T	Power distributors and dispatchers
1	VL	VH	VL	VL	Long-term O-J-T	Power generating and reactor plant operators
1	VL	VH	VL	VL	Long-term O-J-T	Gas and petroleum plant and system occupations[1]
1	VL	VH	VL	VL	Long-term O-J-T	Stationary engineers
3	VL	VH	VL	VL	Long-term O-J-T	Water and liquid waste treatment plant and system operators[1]
2	VL	VH	VL	VL	Long-term O-J-T	All other plant and system operators[1]
523	-	-	-	-	-	Operators, fabricators, and laborers
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3	VL	L	H	VL	Moderate-term O-J-T	Numerical control machine tool operators and tenders, metal and plastic[1]
3	VL	H	H	VL	Moderate-term O-J-T	Combination machine tool setters, set-up operators, operators, and tenders[1]
16	-	-	-	-	-	Machine tool cut and form setters, operators, and tenders, metal and plastic
1	VL	L	H	VL	Moderate-term O-J-T	Drilling and boring machine tool setters and set-up operators, metal and plastic[1]
1	VL	L	H	VL	Moderate-term O-J-T	Grinding machine setters and set-up operators, metal and plastic
1	VL	L	H	VL	Moderate-term O-J-T	Lathe and turning machine tool setters and set-up operators, metal and plastic[1]
5	VL	L	H	VL	Moderate-term O-J-T	Machine forming operators and tenders, metal and plastic
2	VL	L	H	VL	Moderate-term O-J-T	Machine tool cutting operators and tenders, metal and plastic
1	VL	L	L	VL	Moderate-term O-J-T	Punching machine setters and set-up operators, metal and plastic
4	VL	L	H	VL	Moderate-term O-J-T	All other machine tool cutting and forming operatives[1]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1	VL	L	H	VL	Moderate-term O-J-T	Metal fabricators, structural metal products[1]
0	VL	L	VH	L	Moderate-term O-J-T	Soldering and brazing machine operators and tenders[1]
3	VL	H	H	VL	Moderate-term O-J-T	Welding machine setters, operators, and tenders
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1	VL	L	H	VL	Moderate-term O-J-T	Electrolytic plating machine operators and tenders, setters and set-up operators, metal and plastic[1]
0	VL	L	H	VL	Moderate-term O-J-T	Foundry mold assembly and shakeout workers
0	VL	H	H	VL	Moderate-term O-J-T	Furnace operators and tenders
0	VL	L	H	VL	Moderate-term O-J-T	Heat treating machine operators and tenders, metal and plastic[1]
1	VL	L	H	VL	Moderate-term O-J-T	Metal molding machine operators and tenders, setters and set-up operators
6	VL	L	H	VL	Moderate-term O-J-T	Plastic molding machine operators and tenders, setters and set-up operators
4	VL	L	H	VL	Moderate-term O-J-T	All other metal and plastic machine setters, operators, and related workers[1]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
2	VL	H	H	VL	Moderate-term O-J-T	Bindery machine operators and set-up operators[1]
0	-	-	-	-	-	Prepress printing workers, production
0	VL	H	H	VL	Moderate-term O-J-T	Photoengraving and lithographic machine operators and tenders[1]
0	VL	H	VH	H	Moderate-term O-J-T	Typesetting and composing machine operators and tenders[1]
6	-	-	-	-	-	Printing press operators
0	VL	H	H	VL	Moderate-term O-J-T	Letterpress operators
2	VL	H	H	VL	Moderate-term O-J-T	Offset lithographic press operators
3	VL	H	H	VL	Moderate-term O-J-T	Printing press machine setters, operators and tenders
1	VL	H	H	VL	Moderate-term O-J-T	All other printing press setters and set-up operators
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1	VL	H	H	VL	Moderate-term O-J-T	All other printing, binding, and related workers[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
[redacted]									
Extruding and forming machine operators and tenders, synthetic or glass fibers	22	28	6	VL	28.1	VH	0.0	3	VL
Pressing machine operators and tenders, textile, garment, and related materials	77	76	-1	VL	-1.5	VL	0.0	19	VL
Sewing machine operators, garment	531	391	-140	VL	26.3	VH	2.6	93	L
Sewing machine operators, non-garment	129	117	-12	VL	-9.0	VL	3.1	25	VL
Textile bleaching and dyeing machine operators and tenders	30	37	7	VL	23.7	VH	3.4	4	VL
Textile draw-out and winding machine operators and tenders[1]	190	143	-47	VL	24.7	VH	0.0	29	VL
Textile machine setters and set-up operators[1]	39	36	-2	VL	-6.1	VL	5.2	7	VL
[redacted]									
Head sawyers and sawing machine operators and tenders, setters and set-up operators[1]	62	47	-15	VL	23.7	VH	1.6	8	VL
Woodworking machine operators and tenders, setters and set-up operators[1]	64	50	-14	VL	22.0	H	7.8	10	VL
[redacted]									
Boiler operators and tenders, low pressure	18	12	-6	VL	32.0	VH	0.0	0	VL
Cement and gluing machine operators and tenders[1]	36	25	-11	VL	30.1	VH	0.0	5	VL
Chemical equipment controllers, operators and tenders	75	67	-8	VL	10.6	L	0.0	10	VL
Cooking and roasting machine operators and tenders, food and tobacco[1]	28	30	2	VL	7.6	L	0.0	4	VL
Crushing and mixing machine operators and tenders	137	136	-1	VL	-0.7	VL	0.7	22	VL
Cutting and slicing machine setters, operators and tenders	92	103	11	VL	12.0	L	4.3	13	VL
Dairy processing equipment operators, including setters	14	14	0	VL	-1.5	VL	0.0	2	VL
Electronic semiconductor processors	33	34	1	VL	4.2	VL	0.0	4	VL
Extruding and forming machine setters, operators and tenders[1]	102	95	-8	VL	-7.5	VL	0.0	16	VL
Furnace, kiln, or kettle operators and tenders	28	24	-4	VL	12.9	L	0.0	2	VL
Laundry and drycleaning machine operators and tenders, except pressing	175	198	23	L	13.2	L	11.4	31	VL
Motion picture projectionists[1]	8	4	-4	VL	47.3	VH	0.0	1	VL
Packaging and filling machine operators and tenders	329	359	30	L	9.2	L	0.0	75	L
[redacted]									
Coating, painting, and spraying machine operators, tenders, setters, and set-up operators	111	110	-1	VL	-0.7	VL	0.0	16	VL
Painters, transportation equipment	45	49	4	VL	9.2	L	18.0	7	VL
Paper goods machine setters and set-up operators[1]	51	42	-8	VL	16.2	H	0.0	7	VL
Photographic processing machine operators and tenders	43	49	6	VL	14.5	L	0.0	6	VL
Separating and still machine operators and tenders	20	19	-1	VL	-6.0	VL	0.0	3	VL
Shoe sewing machine operators and tenders	14	5	-9	VL	63.6	VH	0.0	2	VL
Tire building machine operators	14	13	-1	VL	-6.4	VL	0.0	1	VL
All other machine operators, tenders, setters, and set-up operators[1]	407	409	2	VL	0.5	VL	2.2	55	L
[redacted]									
Cannery workers	73	82	9	VL	12.0	L	0.0	17	VL
Coil winders, tapers, and finishers	21	15	-5	VL	25.7	VH	0.0	3	VL
Cutters and trimmers, hand[1]	51	47	-4	VL	-7.8	VL	0.0	7	VL
Electrical and electronic assemblers	212	182	-30	VL	14.2	L	0.0	33	VL
Grinders and polishers, hand[1]	74	70	-4	VL	-6.0	VL	0.0	11	VL
Machine assemblers	51	55	4	VL	8.2	L	0.0	9	VL
Meat, poultry, and fish cutters and trimmers, hand[1]	132	168	36	L	27.5	VH	0.0	26	VL
Painting, coating, and decorating workers, hand[1]	33	36	3	VL	10.5	L	18.4	6	VL
Pressers, hand[1]	16	15	-1	VL	-4.4	VL	0.0	2	VL
Sewers, hand[1]	19	17	-2	VL	-9.3	VL	26.3	2	VL
Solderers and brazers[1]	27	31	5	VL	16.9	H	3.7	5	VL
Welders and cutters	314	316	3	VL	0.8	VL	7.0	36	VL
All other assemblers, fabricators, and hand workers[1]	1,583	1,630	46	L	2.9	VL	4.6	267	H

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unemployment rate	Part-time		
						[redacted]
1	VL	VL	H	VL	Moderate-term O-J-T	Extruding and forming machine operators and tenders, synthetic or glass fibers
2	VL	VL	VH	H	Moderate-term O-J-T	Pressing machine operators and tenders, textile, garment, and related materials
10	L	VL	VH	L	Moderate-term O-J-T	Sewing machine operators, garment
2	VL	VL	VH	L	Moderate-term O-J-T	Sewing machine operators, non-garment
1	VL	VL	H	VL	Moderate-term O-J-T	Textile bleaching and dyeing machine operators and tenders
3	VL	VL	VH	L	Moderate-term O-J-T	Textile draw-out and winding machine operators and tenders[1]
1	VL	VL	VH	L	Moderate-term O-J-T	Textile machine setters and set-up operators[1]
						[redacted]
1	VL	VL	VH	VL	Moderate-term O-J-T	Head sawyers and sawing machine operators and tenders, setters and set-up operators[1]
1	VL	VL	VH	VL	Moderate-term O-J-T	Woodworking machine operators and tenders, setters and set-up operators[1]
						[redacted]
0	VL	VH	VL	VL	Moderate-term O-J-T	Boiler operators and tenders, low pressure
1	VL	L	H	VL	Moderate-term O-J-T	Cement and gluing machine operators and tenders[1]
3	VL	VH	L	VL	Moderate-term O-J-T	Chemical equipment controllers, operators and tenders
1	VL	L	H	VL	Moderate-term O-J-T	Cooking and roasting machine operators and tenders, food and tobacco[1]
3	VL	L	H	VL	Moderate-term O-J-T	Crushing and mixing machine operators and tenders
3	VL	L	H	VL	Moderate-term O-J-T	Cutting and slicing machine setters, operators and tenders
0	VL	VH	L	VL	Moderate-term O-J-T	Dairy processing equipment operators, including setters
1	VL	L	H	VL	Moderate-term O-J-T	Electronic semiconductor processors
2	VL	L	H	VL	Moderate-term O-J-T	Extruding and forming machine setters, operators and tenders[1]
0	VL	H	H	VL	Moderate-term O-J-T	Furnace, kiln, or kettle operators and tenders
6	VL	VL	VH	H	Moderate-term O-J-T	Laundry and drycleaning machine operators and tenders, except pressing
0	VL	L	H	VL	Short-term O-J-T	Motion picture projectionists[1]
11	L	VL	VH	VL	Moderate-term O-J-T	Packaging and filling machine operators and tenders
						[redacted]
3	VL	L	H	VL	Moderate-term O-J-T	Coating, painting, and spraying machine operators, tenders, setters, and set-up operators
1	VL	L	H	VL	Moderate-term O-J-T	Painters, transportation equipment
1	VL	L	H	VL	Moderate-term O-J-T	Paper goods machine setters and set-up operators[1]
2	VL	L	H	VL	Short-term O-J-T	Photographic processing machine operators and tenders
1	VL	VH	L	VL	Moderate-term O-J-T	Separating and still machine operators and tenders
0	VL	VL	VH	L	Moderate-term O-J-T	Shoe sewing machine operators and tenders
0	VL	L	H	VL	Moderate-term O-J-T	Tire building machine operators
10	L	L	H	VL	Moderate-term O-J-T	All other machine operators, tenders, setters, and set-up operators[1]
						[redacted]
3	VL	VL	VH	VL	Short-term O-J-T	Cannery workers
0	VL	L	VH	L	Short-term O-J-T	Coil winders, tapers, and finishers
1	VL	L	VH	L	Short-term O-J-T	Cutters and trimmers, hand[1]
5	VL	L	VH	L	Short-term O-J-T	Electrical and electronic assemblers
2	VL	L	VH	L	Short-term O-J-T	Grinders and polishers, hand[1]
2	VL	L	VH	L	Short-term O-J-T	Machine assemblers
7	VL	L	VH	L	Short-term O-J-T	Meat, poultry, and fish cutters and trimmers, hand[1]
1	VL	L	VH	L	Short-term O-J-T	Painting, coating, and decorating workers, hand[1]
0	VL	L	VH	L	Short-term O-J-T	Pressers, hand[1]
0	VL	VL	H	H	Short-term O-J-T	Sewers, hand[1]
1	VL	L	VH	L	Short-term O-J-T	Solderers and brazers[1]
8	VL	H	H	VL	Postsecondary vocational training	Welders and cutters
41	H	L	VH	L	Short-term O-J-T	All other assemblers, fabricators, and hand workers[1]

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[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

1994 Matrix Occupation	Employment		Employment change, 1994-2005				Percent self-employed, 1994	Annual average job openings due to growth and total replacement needs, 1994-2005	
			Numeric		Percent				
	1994	2005	Number	Rank	Number	Rank		Number	Rank
[illegible]									
Motor vehicle operators	3,620	4,045	425	-	11.7	-	8.8	676	-
Bus drivers	568	663	95	-	16.7	-	1.8	109	-
Bus drivers, except school	165	193	29	L	17.4	H	6.1	32	VL
Bus drivers, school	404	470	66	L	16.4	H	0.0	78	L
Taxi drivers and chauffeurs	129	157	28	L	21.9	H	44.1	34	VL
Truck drivers	2,897	3,196	299	-	10.3	-	8.7	398	-
Driver/sales workers	331	359	28	L	8.4	L	4.5	50	L
Truck drivers light and heavy	2,565	2,837	271	H	10.6	L	9.2	347	VH
All other motor vehicle operators[1]	26	29	3	VL	11.1	L	0.0	5	VL
[illegible]									
Locomotive engineers[1]	22	19	-3	VL	14.2	L	0.0	1	VL
Railroad brake, signal, and switch operators[1]	19	13	-6	VL	30.8	VH	0.0	1	VL
Railroad conductors and yardmasters[1]	26	25	-2	VL	-8.4	VL	0.0	1	VL
Rail yard engineers, dinkey operators, and hostlers[1]	6	4	-2	VL	40.4	VH	0.0	0	VL
Subway and streetcar operators[1]	12	15	3	VL	22.7	H	0.0	1	VL
[illegible]									
Able seamen, ordinary seamen, and marine oilers[1]	20	20	-1	VL	-2.8	VL	0.0	2	VL
Captains and pilots, ship[1]	13	13	0	VL	-0.1	VL	7.9	1	VL
Mates, ship, boat, and barge[1]	7	8	0	VL	5.8	VL	0.0	1	VL
Ship engineers[1]	8	8	0	VL	3.4	VL	0.0	1	VL
[illegible]									
Crane and tower operators	45	42	-3	VL	-6.2	VL	0.0	6	VL
Excavation and loading machine operators	88	100	11	VL	12.9	L	14.7	5	VL
Grader, dozer, and scraper operators	108	113	6	VL	5.4	VL	8.4	11	VL
Hoist and winch operators[1]	9	9	0	VL	-5.2	VL	0.0	1	VL
Industrial truck and tractor operators	464	493	29	L	6.3	VL	0.2	75	L
Operating engineers	146	154	7	VL	5.0	VL	6.8	12	VL
All other material moving equipment operators[1]	201	219	18	L	9.2	L	1.5	16	VL
All other transportation and material moving equipment operators[1]	145	161	16	L	11.1	L	2.1	22	VL
[illegible]									
Freight, stock, and material movers, hand[1]	765	728	-36	VL	-4.7	VL	2.1	232	H
Hand packers and packagers	942	1,102	160	H	17.0	H	0.1	271	H
Helpers, construction trades[1]	513	581	68	L	13.2	L	0.8	138	L
Machine feeders and offbearers	262	242	-20	VL	-7.6	VL	0.0	29	VL
Parking lot attendants[1]	64	76	13	VL	19.8	H	0.0	12	VL
Refuse collectors	111	115	4	VL	4.0	VL	0.9	15	VL
Service station attendants	167	148	-20	VL	11.8	L	5.4	61	L
Vehicle washers and equipment cleaners	249	299	50	L	19.9	H	6.8	104	L
All other helpers, laborers, and material movers, hand[1]	1,727	1,980	253	H	14.6	L	1.6	567	VH

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

Table 2. Occupational employment and job openings data, 1994-2005, and worker characteristics, 1994 — Continued

(Numbers in thousands)

Annual average job openings due to growth and net replacement needs, 1994-2005		Ranking of selected occupational characteristics			Education and Training Category	1994 Matrix Occupation
Number	Rank	Weekly earnings	Unem-ployment rate	Part-time		
						[illegible]
66	-	-	-	-	-	Motor vehicle operators
18	-	-	-	-	-	Bus drivers
5	VL	L	L	VH	Moderate-term O-J-T	Bus drivers, except school
12	L	L	L	VH	Short-term O-J-T	Bus drivers, school
4	VL	L	H	H	Short-term O-J-T	Taxi drivers and chauffeurs
75	-	-	-	-	-	Truck drivers
11	L	H	L	L	Short-term O-J-T	Driver/sales workers
64	H	H	H	L	Short-term O-J-T	Truck drivers light and heavy
1	VL	H	H	L	Short-term O-J-T	All other motor vehicle operators[1]
						[illegible]
0	VL	VH	VL	VL	Work experience in a related occupation	Locomotive engineers[1]
0	VL	VH	VL	VL	Work experience in a related occupation	Railroad brake, signal, and switch operators[1]
0	VL	VH	VL	VL	Work experience in a related occupation	Railroad conductors and yardmasters[1]
0	VL	VH	VL	VL	Work experience in a related occupation	Rail yard engineers, dinkey operators, and hostlers[1]
0	VL	VH	VL	VL	Moderate-term O-J-T	Subway and streetcar operators[1]
						[illegible]
0	VL	VH	L	VL	Short-term O-J-T	Able seamen, ordinary seamen, and marine oilers[1]
0	VL	VH	L	VL	Work experience in a related occupation	Captains and pilots, ship[1]
0	VL	VH	L	VL	Work experience in a related occupation	Mates, ship, boat, and barge[1]
0	VL	VH	L	VL	Work experience in a related occupation	Ship engineers[1]
						[illegible]
1	VL	H	H	VL	Moderate-term O-J-T	Crane and tower operators
3	VL	H	VH	VL	Moderate-term O-J-T	Excavation and loading machine operators
2	VL	H	VH	VL	Moderate-term O-J-T	Grader, dozer, and scraper operators
0	VL	H	VH	VL	Moderate-term O-J-T	Hoist and winch operators[1]
12	L	H	H	VL	Short-term O-J-T	Industrial truck and tractor operators
3	VL	H	VH	VL	Moderate-term O-J-T	Operating engineers
5	VL	H	VH	VL	Moderate-term O-J-T	All other material moving equipment operators[1]
4	VL	H	H	L	Moderate-term O-J-T	All other transportation and material moving equipment operators[1]
						[illegible]
28	H	VL	VH	VH	Short-term O-J-T	Freight, stock, and material movers, hand[1]
39	H	VL	VH	L	Short-term O-J-T	Hand packers and packagers
22	L	VL	VH	L	Short-term O-J-T	Helpers, construction trades[1]
7	VL	L	H	L	Short-term O-J-T	Machine feeders and offbearers
2	VL	H	H	L	Short-term O-J-T	Parking lot attendants[1]
3	VL	L	VH	L	Short-term O-J-T	Refuse collectors
6	VL	VL	VH	H	Short-term O-J-T	Service station attendants
12	L	VL	VH	H	Short-term O-J-T	Vehicle washers and equipment cleaners
79	VH	VL	VH	L	Short-term O-J-T	All other helpers, laborers, and material movers, hand[1]

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

NOTE: Rankings are based on all detailed occupations in the National Industry-Occupation Matrix. Codes for describing the ranked variables are: VH = Very high, H = High, L = Low, VL = Very low. A dash indicates data are not applicable.

low) ranking for earnings and "VH" (very high) for unemployment, however, are unfavorable in comparison with other occupations, and these characteristics detract from the desirability of employment in the occupation. Table 2 also shows that cashiers require only short-term on-the-job training.

Users may wish to identify occupations with favorable characteristics that job seekers can pursue through a specific type of training. For example, a student may be interested in a scientific or engineering occupation but does not care to obtain a 4-year college degree. In another instance a planner may wish to ensure that training programs provided by junior colleges in the area are consistent with the needs of the national labor market. In this case, the planner could examine information for occupations placed in the associate degree educational and training category.

Although table 2 contains a great deal of information useful for career guidance, information about occupational comparisons should be used as an aid, not an end. After using the table to identify occupations with favorable prospects, additional information should be obtained from other sources such as the *Occupational Outlook Handbook* and local sources, if available. Consideration should be given to individual aptitudes and preferences, and alternative sources of training available in the local area should be investigated. The appendix identifies sources of State and local area information.

Chapter III. Education and Training Statistics

About 2.2 million postsecondary degrees were earned during the 1992-93 academic year: 539,000 associate degrees, 1,189,000 bachelor's degrees, 374,000 master's degrees, 43,000 doctoral degrees, and 79,000 first professional degrees. In addition to postsecondary degrees, about 868,000 awards were granted to students. The number of awards from curriculums of under 1 year was 461,000, and 407,000 students received 1- to 4-year awards.

Table 3 presents data on the number of completions of educational programs by type of program and field of study. Data were provided by the National Center for Education Statistics (NCES), U.S. Department of Education, from the survey *Completions 1992-93* of its Integrated Postsecondary Education Data System (IPEDS). For additional postsecondary education trends and data, see the *Digest of Education Statistics*, an annual publication of the National Center for Education Statistics.

NCES surveyed all institutions of higher education that offer awards at the bachelor's degree level and higher, all institutions with 2-year programs, and all public and private institutions with less than 2-year programs. The 1992-93 period was the first time the entire universe of establishments with less than 2-year programs was surveyed, rather than a representative sample. Significant differences in the numbers from previous years for the lower duration cirriculums may be the result of this change. The 1990 version of the *Classification of Instructional Programs*[3] (CIP) was used to categorize data covering July 1, 1992 to June 30, 1993.

The pattern of degrees conferred by field of study has changed in recent years. Although the largest number of degrees are still in the field of business and management, the growth has slowed in recent years as compared to the early 1980's. Other fields such as engineering and engineering-related technologies and computer and information sciences have seen the number of degrees decline as well. On the other hand, the growth in the number of degrees in public administration and services fields and some social science fields, such as psychology and sociology, have increased recently.

Postsecondary education data are now available on the Internet through either the U.S. Department of Education/OERI gopher server (gopher://gopher.ed.gov) under Education, Research, Improvement, and Statistics or through the U. S. Department of Education (ED) World Wide Web server. Access the Education Statistics site (http://www.ed.gov/pubs/stats.html) for statistical tables, charts, and studies produced by NCES including the *Digest of Education Statistics* and the complete public data sets for the most recent 4 years of the Integrated Postsecondary Education Data System.

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[3] *Classification of Instructional Programs*, 1990 edition, (National Center for Education Statistics, August 1991).

Table 3. Awards and degrees, by field of study, 1992-93

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
	Total, all programs	461,185	407,118	536,942	1,166,557	374,022	42,908	78,565
01.	Agricultural business and production	4,011	2,010	3,343	5,008	683	195	–
01.01	Agricultural business and management	411	502	771	3,374	516	146	–
01.0101	Agricultural business and management, general	87	183	439	789	48	0	–
01.0102	Agricultural business/agribusiness operations	22	8	128	869	31	2	–
01.0103	Agricultural economics	0	0	13	1,568	429	144	–
01.0104	Farm and Ranch Management	302	307	120	79	4	0	–
01.0199	Agricultural business and management, other	0	4	71	69	4	0	–
01.02	Agricultural mechanization	138	248	158	249	5	1	–
01.0201	Agricultural mechanization, general	122	94	77	217	5	0	–
01.0204	Agricultural power machinery operator	16	108	68	2	0	0	–
01.03	Agricultural production workers and managers	156	254	529	114	65	9	–
01.0301	Agricultural production workers and managers, general	79	98	293	32	16	0	–
01.0302	Agricultural animal husbandry and production management	61	140	144	41	1	0	–
01.0304	Crop production operations and management	8	8	56	1	4	2	–
01.0399	Agricultural production workers and managers, other	0	0	8	0	6	0	–
01.04	Agricultural and food products processing	0	5	36	153	16	16	–
01.0401	Agricultural food products processing operation and management, general	0	5	36	153	16	16	–
01.05	Agricultural supplies and related services	1,877	131	401	120	2	0	–
01.0501	Agricultural and supplies retailing and wholesaling	170	66	217	65	2	0	–
01.0505	Animal trainer	133	2	59	3	0	0	–
01.0507	Equestrian/equine studies, horse management and training	2	36	112	52	0	0	–
01.0599	Agricultural supplies and related services, other	1,572	27	13	–	–	–	–
01.06	Horticulture services operations and management	1,362	813	1,384	479	35	19	–
01.0601	Horticulture services operations and management, general	736	463	494	118	19	13	–
01.0603	Ornamental horticulture operations and management	213	118	292	214	16	2	–
01.0604	Greenhouse operations and management	27	4	43	–	–	–	–
01.0605	Landscaping operations and management	86	108	221	133	0	0	–
01.0606	Nursery operations and management	13	65	75	–	–	–	–
01.0607	Turf management	36	40	216	4	0	0	–
01.0699	Horticulture services operations and management, other	249	15	43	10	0	4	–
01.07	International agriculture	–	–	–	19	18	0	–
01.99	Agricultural business and production, other	67	57	64	500	26	4	–
01.9999	Agricultural business and production, other	67	57	64	500	26	4	–
02.	Agricultural sciences	405	2,344	900	5,945	1,593	708	–
02.01	Agriculture/agricultural sciences	73	26	340	959	174	5	–
02.0101	Agriculture/agricultural sciences	73	26	340	943	165	5	–
02.0102	Agricultural Extension	0	0	0	16	9	0	–
02.02	Animal sciences	278	2,286	294	2,811	422	193	–
02.0201	Animal sciences, general	126	2,113	124	2,359	331	139	–
02.0202	Agricultural animal breeding and genetics	0	0	13	22	13	5	–
02.0203	Agricultural animal health	0	66	45	7	8	0	–
02.0204	Agricultural animal nutrition	1	0	0	0	2	12	–
02.0205	Agricultural animal physiology	0	0	15	9	2	4	–
02.0206	Dairy science	0	16	9	99	19	6	–
02.0209	Poultry	21	0	23	107	24	12	–
02.0299	Animal sciences, other	130	91	65	208	23	15	–
02.03	Food sciences and technology	0	6	42	449	317	138	–
02.04	Plant sciences	35	19	185	1,468	523	299	–
02.0401	Plant sciences, general	0	0	3	216	75	48	–
02.0402	Agronomy and crop science	35	0	17	550	232	154	–
02.0403	Horticulture science	0	17	81	517	128	53	–
02.0405	Plant breeding and genetics	–	–	–	0	16	7	–
02.0406	Agricultural plant pathology	–	–	–	0	4	8	–
02.0407	Agricultural plant physiology	–	–	–	0	0	2	–
02.0408	Plant protection (pest management)	0	0	14	19	25	1	–
02.0409	Range science and management	0	2	1	112	30	22	–
02.0499	Plant sciences, other	0	0	69	54	13	4	–
02.05	Soil sciences	9	0	4	92	86	60	–
02.99	Agriculture/agricultural sciences, other	10	7	35	166	71	13	–
03.	Conservation and renewable natural resources	346	1,286	1,348	5,882	1,706	270	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
03.01	Natural resources conservation	0	74	239	2,789	768	79	–
03.0101	Natural resources conservation, general	0	74	191	1,292	274	36	–
03.0102	Environmental Science/Studies	0	0	48	1,497	494	43	–
03.02	Natural resources management and protective services	27	10	199	341	96	1	–
03.0201	Natural resources management and policy	0	0	114	297	88	0	–
03.0203	Natural resources law enforcement and protective services	27	0	24	–	–	–	–
03.0299	Natural resources management and protective services, other	0	10	61	44	8	1	–
03.03	Fishing and fisheries sciences and management	0	9	39	220	101	24	–
03.04	Forestry production and processing	29	32	331	195	27	12	–
03.0401	Forest harvesting and production technology/technician	0	27	220	127	27	12	–
03.0404	Forest products technology/technician	15	0	60	21	0	0	–
03.0405	Logging/timber harvesting	0	2	2	–	–	–	–
03.0499	Forestry production and processing, other	14	3	49	47	0	0	–
03.05	Forestry and related sciences	285	56	188	1,082	493	124	–
03.0501	Forestry, general	28	40	92	561	336	89	–
03.0502	Forestry sciences	0	1	5	162	68	15	–
03.0506	Forest management	0	0	65	108	39	4	–
03.0509	Wood science and pulp/paper technology	0	15	16	110	20	6	–
03.0599	Forestry and related sciences, other	257	0	10	141	29	10	–
03.06	Wildlife management	3	23	314	912	166	17	–
03.99	Conservation and renewable natural resources, other	2	1,082	35	343	55	13	–
04.	Architecture and related programs	2	80	394	9,271	3,825	148	–
04.02	Architecture	0	10	66	5,267	1,950	48	–
04.03	City, community, and regional planning	0	0	2	487	1,272	79	–
04.04	Architectural environmental design	0	8	39	755	53	6	–
04.05	Interior architecture	2	56	267	1,066	21	0	–
04.06	Landscape architecture	0	4	0	1,033	327	2	–
04.07	Architectural urban design and planning	–	–	–	30	69	1	–
04.99	Architecture and environmental design, other	0	2	20	633	133	12	–
05.	Area and ethnic studies	105	414	33	5,510	1,534	178	–
05.01	Area studies	74	39	10	3,998	1,164	154	–
05.0101	African studies	3	0	0	41	15	3	–
05.0102	American studies/civilization	0	14	8	1,558	251	87	–
05.0103	Asian studies	27	0	0	460	121	1	–
05.0104	East Asian studies	0	5	0	454	171	22	–
05.0105	Eastern European area studies	0	0	0	89	17	1	–
05.0106	European studies	0	0	1	115	2	0	–
05.0107	Latin American studies	14	0	0	389	219	8	–
05.0108	Middle Eastern studies	11	0	0	109	95	18	–
05.0109	Pacific area studies	–	–	–	9	7	0	–
05.0110	Russian and Slavic studies	3	19	0	292	126	2	–
05.0111	Scandinavian studies	–	–	–	15	1	1	–
05.0112	South Asian studies	–	–	–	12	17	1	–
05.0113	Southeast Asian studies	–	–	–	8	2	0	–
05.0114	Western European studies	15	0	0	27	44	6	–
05.0115	Canadian studies	–	–	–	3	0	0	–
05.0199	Area studies, other	1	1	1	417	76	4	–
05.02	Ethnic and cultural studies, total	31	375	22	1,272	214	18	–
05.0201	Afro-American (Black) studies	2	11	0	433	68	8	–
05.0202	American Indian/Native American studies	0	11	5	41	8	0	–
05.0203	Hispanic-American studies	–	–	–	136	28	0	–
05.0204	Islamic studies	–	–	–	0	5	0	–
05.0205	Jewish/Judaic studies	0	312	0	121	36	1	–
05.0207	Women's studies	28	37	0	411	33	0	–
05.0299	Ethnic and cultural studies, other	1	4	17	130	36	9	–
05.99	Area, ethnic, and cultural studies, other	0	0	1	240	156	6	–
08.	Marketing and distribution	12,185	5,032	8,007	7,171	561	7	–
08.01	Apparel and accessories marketing operations	953	672	2,526	1,624	0	5	–
08.0101	Apparel and accessories marketing operations, general	8	31	92	131	0	0	–
08.0102	Fashion merchandising	199	535	2,422	1,492	0	5	–
08.0103	Fashion modeling	619	94	0	–	–	–	–
08.0199	Apparel an accessories marketing, other	127	12	12	1	0	0	–
08.02	Business and personal services marketing operations	29	5	136	561	7	0	–
08.0204	Business services marketing operations	28	0	4	–	–	–	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
08.0299	Business and personal services marketing, other	1	5	132	561	7	0	–
08.03	Entrepreneurship	160	24	101	139	80	0	–
08.04	Financial services marketing operations	98	31	80	18	0	0	–
08.05	Floristry marketing operations	460	497	17	–	–	–	–
08.0503	Floristry marketing operations	460	497	17	–	–	–	–
08.06	Food products retailing and wholesaling operations	75	11	28	121	26	0	–
08.0601	Food products retailing and wholesaling operations	75	11	28	121	26	0	–
08.07	General retailing and wholesaling operations	1,664	1,084	2,789	3,753	393	2	–
08.0701	Auctioneering	54	0	0	–	–	–	–
08.0704	General buying operations	38	55	54	29	0	0	–
08.0705	General retailing operations	587	278	728	248	0	0	–
08.0706	General selling skills and sales operations	555	140	338	495	0	0	–
08.0708	General marketing operations	30	200	784	2,687	393	2	–
08.0709	General distribution operations	336	380	886	294	0	0	–
08.0799	General retailing and wholesaling operations and skills, other	336	380	886	294	0	0	–
08.08	Home and office products marketing operations	1	26	10	25	0	0	–
08.0809	Home products marketing operations	0	11	0	25	0	0	–
08.0810	Office products marketing operations	0	0	2	–	–	–	–
08.0899	Home and office products marketing, other	1	15	8	–	–	–	–
08.09	Hospitality and recreation marketing operations	447	84	176	135	0	0	–
08.0901	Hospitality and recreation marketing operations general	42	37	100	47	0	0	–
08.0902	Hotel/motel services marketing operations	71	35	22	–	–	–	–
08.0903	Recreational products/services marketing operations	0	5	7	88	0	0	–
08.0906	Food sales operations	327	0	0	–	–	–	–
08.0999	Hospitality and recreation marketing, other	7	7	47	–	–	–	–
08.10	Insurance marketing operations	591	0	38	–	–	–	–
08.11	Tourism and travel services marketing operations	7,187	2,205	1,719	371	20	0	–
08.1104	Tourism promotion operations	584	512	522	222	19	0	–
08.1105	Travel services marketing	3,225	615	601	23	0	0	–
08.1199	Transportation and travel marketing, other	3,378	1,078	596	126	1	0	–
08.12	Vehicles and petroleum products marketing operations	8	137	128	64	0	0	–
08.1203	Vehicle parts and accessories marketing operations	4	124	108	27	0	0	–
08.1208	Vehicle marketing operations	0	0	15	35	0	0	–
08.1299	Vehicles and petroleum products marketing operations, other	4	13	5	2	0	0	–
08.99	Marketing and distribution, other	512	276	311	360	25	0	–
09.	Communications	1,816	758	1,993	54,361	4,776	293	–
09.01	Communications, general	92	31	671	25,327	1,565	184	–
09.02	Advertising	3	74	283	3,281	240	0	–
09.04	Journalism and mass communications	132	262	551	14,306	1,750	55	–
09.0401	Journalism	11	256	400	11,448	1,528	26	–
09.0402	Broadcast journalism	121	6	123	497	12	0	–
09.0403	Mass communications	0	0	28	2,008	202	29	–
09.05	Public relations	1	0	49	2,259	240	0	–
09.07	Radio and television broadcasting	1,133	172	250	6,473	366	14	–
09.99	Communications, other	455	219	189	2,715	615	40	–
10.	Communications technologies	662	458	1,907	881	455	8	–
10.01	Communications technology	662	458	1,907	881	455	8	–
10.0101	Educational/instructional media technology/technician	0	7	58	0	30	0	–
10.0103	Photographic technology/technician	41	101	290	23	0	0	–
10.0104	Radio and television broadcasting technology/technician	563	276	1,140	725	327	8	–
10.0199	Communications technologies, other	58	74	419	133	98	0	–
11.	Computer and information sciences	18,062	11,329	10,307	24,518	10,175	808	–
11.01	Computer and information sciences, general	3,340	1,374	2,629	16,159	7,445	686	–
11.02	Computer programming	5,394	4,135	2,851	214	15	0	–
11.03	Data processing technology/technician	3,316	2,220	2,027	225	62	0	–
11.04	Information science and systems	1,247	158	1,196	3,661	1,301	15	–
11.05	Computer systems analysis	0	29	69	231	78	8	–
11.07	Computer science	92	91	482	3,134	882	82	–
11.99	Computer and information sciences, other	4,673	3,322	1,053	894	392	17	–
12.	Personal, and miscellaneous services	29,439	84,614	5,348	160	0	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
12.02	Gaming and sports officiating services	500	17	0	–	–	–	–
12.0203	Card dealer	500	17	0	–	–	–	–
12.03	Funeral services	9	879	862	98	0	0	–
12.0401	Personal services, general	1,109	352	1	–	–	–	–
12.0402	Barbering	790	4,475	11	–	–	–	–
12.04	Cosmetic services, general	25,340	66,544	184	0	0	0	–
12.0401	Comestic services, general	1,109	352	1	–	–	–	–
12.0402	Barber/Hairstylist	790	4,475	11	–	–	–	–
12.0403	Cosmetologist	5,126	59,686	170	0	0	0	–
12.0404	Electrolysis technician	225	31	0	–	–	–	–
12.0405	Massage	4,285	661	0	–	–	–	–
12.0406	Make-up artistry	9,370	269	0	0	0	0	–
12.0499	Personal services, other	4,455	1,070	2	–	–	–	–
12.05	Culinary arts and related services	3,291	17,156	4,297	61	0	0	–
12.0501	Baker/pastry chef	129	292	207	–	–	–	–
12.0502	Bartender/mixologist	1,207	7	0	0	0	0	–
12.0503	Culinary arts/chef training	712	15,765	2,631	–	–	–	–
12.0504	Food and beverage/restaurant operations manager	359	274	427	61	0	0	–
12.0505	Kitchen personnel/cook and assistant training	126	163	33	–	–	–	–
12.0506	Meatcutter	101	157	7	–	–	–	–
12.0507	Waiter/waitress and dining room manager	154	424	0	–	–	–	–
12.0599	Culinary arts and related services, other	503	74	992	–	–	–	–
12.99	Consumer and miscellaneous services, other	299	18	5	1	0	0	–
13.	Education	1,732	8,927	9,399	110,107	98,497	7,079	–
13.01	Education, general	286	230	3,619	2,044	10,175	1,216	–
13.02	Bilingual/bicultural education	38	1	7	61	231	11	–
13.03	Curriculum and instruction	0	2	0	9	7,727	798	–
13.04	Education administration and supervision	5	1	10	6	10,814	2,254	–
13.0401	Education administration and supervision, general	0	1	9	4	7,148	1,828	–
13.0402	Administration of special education	–	–	–	0	10	11	–
13.0403	Adult and continuing education administration	–	–	–	0	217	61	–
13.0404	Educational supervision	–	–	–	0	724	24	–
13.0405	Elementary, middle and secondary education administration	0	0	0	0	1,702	41	–
13.0406	Higher education administration	0	0	0	1	406	391	–
13.0407	Community and junior college education administration	0	0	0	0	71	7	–
13.0499	Educational administration and supervision, other	5	0	1	1	536	93	–
13.05	Educational/instruction media design	0	0	5	64	939	62	–
13.06	Educational evaluation, research and statistics	0	0	0	19	161	101	–
13.0601	Educational evaluation and research	0	0	0	18	32	30	–
13.0603	Educational statistics and research methods	0	0	0	1	35	41	–
13.0604	Educational assessment, testing and measurement	0	0	0	0	89	23	–
13.0699	Education evaluation, research and statistics, other	–	–	–	0	5	7	–
13.07	International and comparative education	0	0	0	4	113	5	–
13.09	Social and philosophical foundations of education	0	0	0	24	250	102	–
13.10	Special education, total	103	266	207	8,873	9,767	249	–
13.1001	Special education, general	17	30	101	5,991	7,567	233	–
13.1003	Education of the deaf and hearing impaired	0	22	42	203	235	0	–
13.1004	Education of the gifted and talented	0	0	0	1	171	0	–
13.1005	Education of the emotionally handicapped	0	0	0	297	218	2	–
13.1006	Education of the mentally handicapped	0	0	3	627	147	0	–
13.1007	Education of the multiple handicapped	0	0	0	113	99	0	–
13.1008	Education of the physically handicapped	0	0	2	28	63	0	–
13.1009	Education of the blind and visually handicapped	57	0	0	27	28	0	–
13.1011	Education of specific learning disabled	0	0	0	573	659	9	–
13.1012	Education of the speech impaired	0	0	0	672	295	0	–
13.1013	Education of the autistic	0	0	0	0	0	0	–
13.1099	Special education, other	29	214	59	341	306	5	–
13.11	Student counseling and personnel services	0	0	3	80	12,078	395	–
13.1101	Counselor education counseling and guidance services	0	0	3	80	11,621	379	–
13.1102	College/postsecondary student counseling and personnel services	0	0	0	0	457	16	–
13.12	General teacher education	112	268	2,492	62,381	22,155	433	–
13.1201	Adult and continuing education	1	9	3	24	927	148	–
13.1202	Elementary teacher education	0	63	1,036	50,479	13,254	76	–
13.1203	Junior high/middle school teacher education	0	0	11	1,308	563	0	–
13.1204	Pre-elementary teacher education	99	123	862	6,210	1,693	45	–
13.1205	Secondary teacher education	0	17	309	3,859	3,715	76	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
13.1299	Teacher education, multiple levels	1	56	282	430	1,654	88	–
13.13	Teacher education, specific academic and vocational programs	158	44	548	35,523	16,525	821	–
13.1301	Agricultural teacher education (vocational)	0	0	16	427	234	48	–
13.1302	Art teacher education	0	0	27	1,835	656	27	–
13.1303	Business teacher education (vocational)	0	0	15	1,602	534	16	–
13.1304	Driver and safety teacher education	0	0	0	35	60	1	–
13.1305	English teacher education	0	0	30	2,934	751	21	–
13.1306	Foreign languages teacher education	0	3	1	399	242	9	–
13.1307	Health teacher education	91	2	45	1,553	841	87	–
13.1308	Home economics teacher education (vocational)	0	0	13	380	177	10	–
13.1309	Technology teacher education/industrial arts teacher education	0	1	22	1,530	498	22	–
13.1310	Marketing operations teacher education and distributive teacher education	0	0	0	99	17	2	–
13.1311	Mathematics teacher education	0	0	14	1,999	915	35	–
13.1312	Music teacher education	0	0	15	2,861	899	74	–
13.1314	Physical education teacher education	0	11	280	11,712	3,057	174	–
13.1315	Reading teacher education	0	0	1	152	3,939	71	–
13.1316	Science teacher education	0	0	5	1,165	727	38	–
13.1317	Social science teacher education	0	0	2	885	118	6	–
13.1318	Social studies teacher education	0	0	9	2,428	453	5	–
13.1319	Technical teacher education (vocational)	7	1	31	228	275	42	–
13.1320	Trade and industrial education (vocational)	10	1	9	1,100	458	75	–
13.1321	Computer teacher education	1	0	0	16	427	2	–
13.1322	Biology teacher education	–	–	–	328	131	0	–
13.1323	Chemistry teacher education	–	–	–	49	10	0	–
13.1324	Drama and dance teacher education	0	2	0	35	0	0	–
13.1325	French language teacher education	–	–	–	68	22	0	–
13.1326	German language teacher education	–	–	–	12	3	0	–
13.1327	Health occupations teacher education (vocational)	0	0	0	21	53	2	–
13.1328	History teacher education	–	–	–	380	38	0	–
13.1329	Physics teacher education	0	0	2	22	13	0	–
13.1330	Spanish teacher education	–	–	–	214	54	0	–
13.1331	Speech teacher education	0	0	1	214	5	4	–
13.1399	Teacher education, other	49	23	8	904	918	52	–
13.14	Teaching English as a second language/foreign language	823	247	27	97	1,568	4	–
13.15	Teacher assistant/aide	176	503	809	2	0	0	–
13.9999	Teacher education, specific areas, other	31	7,385	1,674	717	2,412	179	–
14.	Engineering	373	432	2,872	62,757	27,722	5,833	–
14.01	Engineering, general	87	42	1,642	2,169	1,349	284	–
14.02	Aerospace, aeronautical, and astronautical engineering	0	0	8	2,735	1,047	203	–
14.03	Agricultural engineering	10	0	0	512	150	80	–
14.04	Architectural engineering	0	0	17	497	29	0	–
14.05	Bioengineering and biomedical engineering	0	10	7	708	469	150	–
14.06	Ceramic sciences and engineering	0	0	16	267	92	60	–
14.07	Chemical engineering	1	7	91	4,598	994	595	–
14.08	Civil engineering	27	0	54	8,811	3,543	569	–
14.0801	Civil engineering, general	27	0	54	8,811	3,543	569	–
14.0802	Geotechnical engineering	0	0	0	3	0	0	–
14.0803	Structural engineering	0	0	0	0	1	1	–
14.0804	Transportation and highway engineering	0	0	0	10	35	0	–
14.0805	Water resources engineering	0	2	0	9	22	6	–
14.0899	Civil engineering, others	0	9	0	198	25	1	–
14.09	Computer engineering	0	0	17	2,181	972	123	–
14.10	Electrical, electronics, and communications	111	211	614	17,458	7,909	1,413	–
14.11	Engineering mechanics	70	0	0	134	188	98	–
14.12	Engineering physics	0	0	0	300	68	50	–
14.13	Engineering science	0	0	82	298	367	49	–
14.14	Environmental/environmental health engineering	0	2	31	282	783	40	–
14.15	Geological engineering	0	0	1	104	46	11	–
14.16	Geophysical engineering	–	–	–	8	10	1	–
14.17	Industrial/manufacturing engineering	0	4	64	3,408	2,085	267	–
14.18	Materials engineering	0	0	2	568	537	338	–
14.19	Mechanical engineering	38	3	98	14,574	3,983	871	–
14.20	Metallurgical engineering	0	0	1	298	171	93	–
14.21	Mining and mineral engineering	–	–	–	111	68	25	–
14.22	Naval architecture and marine engineering	6	72	0	275	31	6	–
14.23	Nuclear engineering	0	0	1	234	289	115	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
14.24	Ocean engineering	0	0	0	99	94	29	–
14.25	Petroleum engineering	0	0	0	258	139	50	–
14.27	Systems engineering	0	0	0	411	403	31	–
14.28	Textile engineering	0	57	65	34	19	1	–
14.29	Engineering design	0	1	13	0	0	0	–
14.30	Engineering/industrial management	3	2	30	178	680	24	–
14.31	Materials science	5	0	0	43	46	24	–
14.32	Polymer/plastics engineering	6	0	0	45	87	33	–
14.99	Engineering, other	11	10	20	939	1,045	194	–
15.	Engineering and engineering-related technology	7,057	17,452	38,649	16,108	1,100	20	–
15.01	Architectural engineering technology	161	289	1,580	600	1	0	–
15.02	Civil engineering/civil technologies	50	179	1,461	435	0	0	–
15.03	Electrical and electronic engineering-related technologies	2,045	8,897	20,094	4,096	37	0	–
15.0301	Computer engineering technology/technician	161	1,833	2,624	262	23	0	–
15.0303	Electrical/electronic and communication technology/technician	1,050	5,083	15,057	3,312	0	0	–
15.0304	Laser electro-optic technology	0	35	161	25	14	0	–
15.0399	Electrical and electronic engineering-related technology/technicians, other	814	1,946	2,252	497	0	0	–
15.04	Electromechanical instrumentation and maintenance technology	860	1,954	3,261	316	10	3	–
15.0401	Biomedical engineering-related technology/technician	11	53	636	5	0	0	–
15.0402	Computer maintenance technology/technician	670	817	927	1	0	0	–
15.0403	Electromechanical technology/technician	148	375	715	83	8	0	–
15.0404	Instrumentation technology/technician	14	426	528	0	2	3	–
15.0405	Robotics technology/technicians	0	94	325	216	0	0	–
15.0499	Electromechanical instrumentation and maintenance technology/technician, other	17	189	128	11	0	0	–
15.05	Environmental control technologies	2,251	2,577	1,322	253	58	1	–
15.0501	Heating, air conditioning, and refrigeration technology/technician	1,348	1,802	563	2	0	0	–
15.0503	Energy management and system technology/technician	8	38	24	34	0	0	–
15.0505	Solar technology/technician	0	5	16	–	–	–	–
15.0506	Water quality and wastewater treatment technology/technician	810	160	258	73	2	0	–
15.0507	Environmental and pollution control technology/technician	65	338	178	60	22	0	–
15.06	Industrial production technologies	550	702	2,093	4,377	295	5	–
15.0603	Industrial/manufacturing technology/technician	54	229	1,117	3,605	243	5	–
15.0607	Plastics technology/technician	90	54	165	107	0	0	–
15.0611	Metallurgical technology/technician	0	9	108	–	–	–	–
15.0699	Industrial production technologies/technicians, other	406	410	703	665	52	0	–
15.07	Quality control and safety technologies	382	339	517	395	265	4	–
15.0701	Occupational safety and health technology/technician	32	54	149	388	222	4	–
15.0702	Quality control technology/technician	312	244	356	0	33	0	–
15.0799	Quality control and safety technologies/technicians	38	41	12	7	10	0	–
15.08	Mechanical engineering-related technologies	549	1,539	5,224	1,836	0	0	–
15.0801	Aeronautical and aerospace engineering technology/technician	57	755	1,094	381	0	0	–
15.0803	Automotive engineering technology/technician	185	419	1,028	62	0	0	–
15.0805	Mechanical engineering/mechanical technology/technician	133	204	2,200	837	0	0	–
15.0899	Mechanical engineering-related technologies/technicians, other	174	161	902	556	0	0	–
15.09	Mining and petroleum technologies	3	30	175	24	0	0	–
15.0901	Mining technology/technician	2	5	63	9	0	0	–
15.0903	Petroleum technology/technician	1	24	103	15	0	0	–
15.0999	Mining and petroleum technologies/technicians, other	0	1	9	–	–	–	–
15.10	Construction/building technology	42	162	586	870	38	0	–
15.11	Miscellaneous engineering-related technologies	19	335	714	709	166	7	–
15.1101	Engineering-related technology/technician, general	0	57	461	551	140	0	–
15.1102	Surveying	19	139	214	158	26	7	–
15.1103	Hydraulic technology/technician	0	139	39	0	0	0	–
15.99	Engineering-related technologies/technicians, other	145	449	1,662	2,195	230	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
16.	Foreign languages and literature	482	79	514	14,448	3,210	830	–
16.0101	Foreign languages and literatures, general	102	0	189	931	318	53	–
16.0102	Linguistics	0	0	0	553	610	182	–
16.0103	Foreign language interpretation and translation	24	7	28	0	0	0	–
16.03	East and Southeast Asian languages and literatures	74	0	10	586	142	20	–
16.0301	Chinese language and literature	14	0	4	129	54	8	–
16.0302	Japanese language and literature	60	0	5	328	57	2	–
16.0399	East and Southeast languages and literatures, other	0	0	1	129	31	10	–
16.04	East European languages and literatures	41	0	9	693	166	28	–
16.0402	Russian language and literature	41	0	7	612	68	4	–
16.0403	Slavic languages and literature (other than Russian	0	0	2	77	93	24	–
16.0499	East European languages and literatures, other	–	–	–	4	5	0	–
16.05	Germanic languages and literatures	36	1	30	1,612	346	97	–
16.0501	German language and literature	36	1	30	1,573	317	86	–
16.0502	Scandinavian languages and literature	–	–	–	20	8	1	–
16.0599	Germanic languages and literatures, other	–	–	–	19	21	10	–
16.07	South Asian languages	–	–	–	4	1	5	–
16.09	Romantic languages and literatures	180	23	236	8,969	1,333	312	–
16.0901	French language and literature	56	1	53	3,299	513	98	–
16.0902	Italian language and literature	6	0	1	274	50	13	–
16.0904	Portuguese language and literature	–	–	–	41	9	1	–
16.0905	Spanish language and literature	118	22	182	5,267	671	145	–
16.0999	Romantic languages and literature, other	0	0	0	88	90	55	–
16.11	Middle Eastern languages and literatures	3	45	2	82	52	20	–
16.1101	Arabic language and literature	3	0	1	8	3	2	–
16.1102	Hebrew language and literature	0	45	0	54	34	7	–
16.1199	Middle Eastern languages and literatures, other	0	0	1	20	15	11	–
16.12	Classical and Ancient Near Eastern languages and literature	3	0	1	8	3	2	–
16.1201	Classics and classical languages and literatures	0	0	0	596	126	58	–
16.1202	Greek language and literature (Ancient and Medieval)	–	–	–	35	3	1	–
16.1203	Latin language and literature (Ancient and Medieval)	0	0	0	108	13	1	–
16.1299	Classical and Ancient Near Eastern languages and literatures, other	–	–	–	13	1	0	–
16.99	Foreign languages and literatures, other	32	3	2	261	97	53	–
19.	Home economics, general	538	1,351	629	14,545	2,511	338	–
19.01	Home economics, general	2	13	78	3,028	302	42	–
19.02	Business home economics services	0	0	2	156	2	0	–
19.0201	Business home economics	0	0	2	145	0	0	–
19.0202	Home economics communications	–	–	–	11	2	0	–
19.03	Family and community services	32	1	3	185	65	2	–
19.04	Family/consumer resource management	265	0	0	1,286	60	22	–
19.0402	Consumer economics and science	–	–	–	458	18	2	–
19.0499	Family/consumer resource management, other	265	0	0	73	3	6	–
19.05	Foods and nutrition studies	38	1,192	73	2,777	535	60	–
19.0501	Food sciences and human nutrition, general	0	0	0	1,591	335	43	–
19.0502	Food/Food sciences	0	27	1	64	42	4	–
19.0503	Dietitics/human nutritional services	0	5	44	976	125	5	–
19.0505	Food systems administration	0	1	28	28	6	3	–
19.0599	Food and nutrition studies, other	38	1,159	0	118	27	5	–
19.06	Housing studies	0	0	2	578	51	1	–
19.0603	Interior environments	0	0	2	72	2	0	–
19.0699	Housing studies, other	–	–	–	91	2	0	–
19.07	Individual and family development studies	177	105	363	4,427	1,356	193	–
19.0701	Individual and family development studies, general	0	0	67	3,276	333	90	–
19.0703	Family and marriage counseling	–	–	–	25	811	35	–
19.0704	Family life and relations studies	0	1	0	432	61	17	–
19.0705	Gerontological services	76	31	71	68	77	0	–
19.0706	Child growth, care and development studies	101	73	189	376	30	50	–
19.0799	Individual and family development, other	0	0	36	252	43	1	–
19.09	Clothing/apparel and textile studies	24	37	108	1,960	110	14	–
19.99	Home economics, other	0	3	0	151	31	4	–
20.	Vocational home economics	7,732	8,940	6,463	694	39	10	–
20.02	Child care and guidance workers and managers	2,229	4,821	4,476	180	34	4	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
20.0201	Child care and guidance workers and managers, general	1,117	1,634	2,583	179	34	0	–
20.0202	Child care provider/assistant	868	1,128	1,116	–	–	–	–
20.0203	Child care services manager	146	214	620	1	0	4	–
20.0299	Child care and guidance management and services, other	98	1,847	157	0	0	0	–
20.03	Clothing, apparel, and textiles workers and managers	557	1,546	353	31	0	0	–
20.0301	Clothing, apparel, and textiles workers and managers, general	146	301	232	3	0	0	–
20.0303	Commercial garment and apparel workers	78	394	64	26	0	0	–
20.0305	Custom tailor	42	203	5	–	–	–	–
20.0306	Fashion and fabric consultant	7	71	30	2	0	0	–
20.0309	Drycleaner and launderer (commercial)	270	11	2	–	–	–	–
20.0399	Clothing, apparel, and textile workers and managers, other	14	576	20	–	–	–	–
20.04	Institutional food workers and administrators	2,492	1,915	1,251	416	1	2	–
20.0401	Institutional food workers and administrators, general	1,995	939	557	110	1	2	–
20.0404	Dietetic assistant	146	180	380	–	–	–	–
20.0405	Food caterer	50	543	2	–	–	–	–
20.0409	Institutional food services administrator	247	195	283	306	0	0	–
20.0499	Institutional food workers and administrators, other	54	58	29	–	–	–	–
20.05	Home furnishings and equipment installers and consultants	203	275	143	37	0	0	–
20.0501	Home furnishings and equipment installers and consultants, general	203	203	120	25	0	0	–
20.0502	Window treatment maker and installer	0	42	0	–	–	–	–
20.0599	Home furnishings and equipment installers and consultants, other	0	30	23	12	0	0	–
20.06	Custodial, housekeeping and home services workers and managers	2,094	132	17	5	4	0	–
20.0601	Custodial, housekeeping and home services workers and managers, general	1,791	29	11	5	4	0	–
20.0602	Elder care provider/companion	5	25	1	–	–	–	–
20.0604	Custodian/caretaker	226	36	0	–	–	–	–
20.0605	Executive housekeeper	228	36	0	–	–	–	–
20.0699	Custodial, housekeeping and home services workers and managers, other	54	28	0	–	–	–	–
20.99	Vocational home economics, other	157	251	223	25	0	4	–
22.	Law and legal studies	5,066	4,002	8,978	2,108	2,235	88	42,654
22.01	Law and legal studies	5,066	4,002	8,978	2,108	2,235	88	42,654
22.0101	Law (LL.B., J.D.)	–	–	–	–	–	–	42,654
22.0102	Pre-law studies	12	97	213	304	12	0	–
22.0103	Paralegal/legal assistant	5,045	3,777	8,616	922	13	0	–
22.0104	Juridical science/legal spec.(LL.M.,M.C.L.,J.S.D./S.J.D.)	0	0	45	0	1,266	72	–
22.0199	Law and legal studies, other	9	128	104	862	944	16	–
23.	English language and literature/letters	2,011	127	1,320	56,213	7,802	1,341	–
23.01	English language and literature, general	1,882	15	436	41,613	5,292	949	–
23.03	Comparative literature	2	0	701	851	255	140	–
23.04	English composition	0	6	1	307	12	7	–
23.05	English creative writing	3	0	6	877	749	7	–
23.07	American literature (United States)	0	0	4	135	23	12	–
23.08	English literature (British and Commonwealth)	0	0	1	1,494	332	69	–
23.10	Speech and rhetorical studies	78	0	148	9,614	838	108	–
23.11	English technical and business writing	32	11	13	107	158	0	–
23.99	English language and literature/letters, other	4	95	10	1,215	143	49	–
24.	Liberal arts and sciences, general studies and humanities	340	845	158,388	33,552	2,435	122	–
24.01	Liberal arts and sciences/liberal studies	340	845	158,388	33,552	2,435	122	–
24.0101	Liberal arts and sciences	58	187	124,540	21,088	1,847	56	–
24.0102	General studies	227	372	19,720	4,980	50	2	–
24.0103	Humanities/humanistic studies	5	2	5,633	2,940	483	35	–
24.0199	Liberal art and science, general studies and humanities, other	50	284	8,495	4,554	245	29	–
25.	Library science	97	58	85	83	4,880	77	–
25.01	Library science/librarianship	27	11	24	81	4,788	72	–
25.03	Library assistant	70	47	59	–	–	–	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
25.99	Library science, other	0	0	2	2	104	5	–
26.	Life sciences	138	217	1,471	47,882	4,798	4,444	–
26.01	Biological sciences/life sciences	2	2	1,331	35,437	2,018	674	–
26.0202	Biochemistry	0	0	2	2,296	179	642	–
26.0203	Biophysics	0	0	0	31	29	50	–
26.03	Botany, total	0	3	0	263	224	223	–
26.0301	Botany, general	0	3	0	249	137	119	–
26.0305	Plant pathology	0	0	0	11	76	78	–
26.0307	Plant physiology	–	–	–	0	9	24	–
26.0399	Botany, other	–	–	–	3	2	2	–
26.04	Cell and molecular biology	0	0	0	1,222	160	405	–
26.0401	Cell biology	–	–	–	157	64	136	–
26.0402	Molecular biology	0	0	0	424	76	188	–
26.0499	Cell and molecular biology, other	0	0	0	641	20	79	–
26.05	Microbiology/bacteriology	12	2	1	1,948	335	520	–
26.06	Miscellaneous biological specializations	16	210	53	2,109	1,089	951	–
26.0601	Anatomy	16	170	0	102	43	107	–
26.0603	Ecology	0	0	3	485	240	83	–
26.0607	Marine/aquatic biology	0	0	5	523	109	36	–
26.0608	Neuroscience	–	–	–	141	52	154	–
26.0609	Nutritional sciences	0	0	18	254	234	100	–
26.0610	Parasitology	0	0	0	0	5	7	–
26.0611	Radiation biology/radiobiology	0	27	0	0	26	9	–
26.0613	Genetics, plant and animal	–	–	–	160	123	219	–
26.0614	Biometrics	–	–	–	18	31	24	–
26.0615	Biostatistics	–	–	–	3	82	28	–
26.0616	Biotechnology research	–	–	–	26	18	0	–
26.0618	Biological immunology	–	–	–	0	4	23	–
26.0619	Virology	–	–	–	0	1	6	–
26.0699	Miscellaneous biological specializations, other	0	0	27	351	62	91	–
26.07	Zoology	51	0	5	3,071	640	788	–
26.0701	Zoology, general	0	0	5	2,552	208	134	–
26.0702	Entomology	45	0	0	70	122	116	–
26.0704	Pathology, human and animal	6	0	0	11	29	110	–
26.0705	Pharmacology, human and animal	0	0	0	33	51	215	–
26.0706	Physiology, human and animal	0	0	0	404	229	211	–
26.0799	Zoology, other	–	–	–	1	1	0	–
26.99	Biological sciences/life sciences, other	57	0	79	1,516	114	193	–
27.	Mathematics	0	54	744	14,874	4,084	1,189	–
27.01	Mathematics	0	40	736	12,677	2,438	808	–
27.03	Applied mathematics	0	0	5	803	394	108	–
27.0301	Applied mathematics, general	0	0	5	803	394	108	–
27.0302	Operations research	–	–	–	446	424	51	–
27.0303	Applied mathematics, other	0	0	1	54	6	0	–
27.05	Mathematical statistics	0	14	2	520	763	214	–
27.99	Mathematics, other	0	0	0	372	59	8	–
29.	Military technologies	0	0	52	11	108	0	–
29.01	Military technologies	0	0	52	11	108	0	–
30.	Multi/interdisciplinary studies	246	138	8,488	24,247	2,510	208	–
30.01	Biological and physical sciences	0	13	5,907	2,139	163	24	–
30.05	Peace and conflict studies	0	5	0	54	64	0	–
30.06	Systems science and theory	0	2	0	121	276	12	–
30.08	Mathematics and computer science	0	0	1	297	10	1	–
30.10	Biopsychology	0	0	0	40	0	9	–
30.11	Gerontology	85	34	16	137	151	0	–
30.12	Historic preservation, conservation and architectural history	0	1	0	49	48	0	–
30.13	Medieval and renaissance studies	0	3	0	25	4	0	–
30.14	Museology/museum studies	0	0	5	2	103	0	–
30.15	Science, technology and society	1	0	9	45	42	5	–
30.99	Multi/interdisciplinary studies, other	160	80	2,580	21,336	1,649	155	–
31.	Parks, recreation, leisure studies	207	158	717	9,880	1,434	108	–
31.01	Parks, recreation and leisure studies	22	7	117	2,040	222	23	–
31.03	Parks, recreation and leisure facilities management	33	32	214	2,455	249	10	–
31.05	Health and physical education/fitness	152	89	309	5,251	940	73	–
31.0501	Health and physical education, general	2	29	216	2,597	347	31	–
31.0502	Adapted physical education/therapeutic recreation	–	–	–	82	2	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
31.0503	Athletic training and sports medicine	109	2	24	489	91	2	–
31.0504	Sport and fitness administration/management	37	35	32	669	158	0	–
31.0505	Exercise sciences/physiology and movement studies	0	17	24	1,223	267	40	–
31.0506	Socio-psychological sports studies	–	–	–	0	27	0	–
31.0599	Health and physical education/fitness, other	4	6	13	191	48	0	–
31.99	Parks, recreation, leisure and fitness studies, other	0	30	77	134	23	2	–
38.	Philosophy and religion	6	712	112	7,841	1,436	448	–
38.01	Philosophy	0	0	34	4,865	711	266	–
38.02	Religion/religious studies	4	39	77	2,606	680	177	–
38.99	Philosophy and religion, other	2	673	1	370	45	5	–
39.	Theology studies and religious vocations	263	2,850	795	6,556	5,572	1,569	5,889
39.01	Biblical and other theological languages and literatures	0	5	3	65	63	8	–
39.02	Bible/biblical studies	15	1,142	396	1,744	335	33	–
39.03	Missions/missionary studies and misology	36	24	12	318	195	45	–
39.04	Religious education	57	131	74	903	873	68	–
39.05	Religious/sacred music	11	6	14	161	105	17	–
39.06	Theological studies	89	766	174	1,536	2,469	766	–
39.0601	Theology/theological studies	89	766	174	1,536	2,469	766	–
39.0602	Divinity/ministry (B.D., M.Div.)	–	–	–	–	–	–	5,608
39.0603	Rabbinical and Talmudic studies (M.H.L./Rav)	–	–	–	–	–	–	281
39.0604	Pre-theological/Pre-ministerial studies	16	14	8	331	30	0	–
39.0699	Theological and ministerial studies, other	15	217	37	527	237	239	–
39.07	Pastoral counseling and specialized ministries	5	418	7	114	717	208	–
39.99	Theological studies and religious vocations, other	19	127	70	835	548	187	–
40.	Physical sciences	4,159	121	1,392	17,694	5,365	4,380	–
40.01	Physical sciences, general	1	2	842	386	71	1	–
40.02	Astronomy	0	0	0	116	89	82	–
40.03	Astrophysics	0	0	0	51	46	16	–
40.04	Atmospheric sciences and meteorology	0	63	89	369	202	65	–
40.05	Chemistry	0	1	244	9,112	1,853	2,264	–
40.0501	Chemistry, general	0	1	241	8,820	1,724	2,084	–
40.0502	Analytical chemistry	–	–	–	0	19	22	–
40.0503	Inorganic chemistry	0	0	1	0	0	7	–
40.0504	Organic chemistry	–	–	–	11	11	14	–
40.0505	Medicinal/pharmaceutical chemistry	–	–	–	11	20	45	–
40.0506	Physical and theoretical chemistry	–	–	–	1	11	24	–
40.0599	Chemistry, other	0	0	2	258	44	23	–
40.06	Geological sciences	4,146	55	22	2,310	925	406	–
40.0601	Geology	0	0	22	2,147	793	314	–
40.0602	Geochemistry	–	–	–	6	5	10	–
40.0603	Geophysics and seismology	0	0	0	45	69	53	–
40.0604	Paleontology	–	–	–	0	2	3	–
40.0699	Geological sciences, other	4,146	55	0	112	56	26	–
40.07	Miscellaneous physical sciences	12	0	60	924	335	233	–
40.0701	Metallurgy	–	–	–	0	3	0	–
40.0702	Oceanography	12	0	57	233	143	112	–
40.0703	Earth and planetary science	0	0	0	591	127	108	–
40.0799	Miscellaneous physical sciences, other	0	0	3	100	62	13	–
40.08	Physics	0	0	85	4,080	1,781	1,277	–
40.0801	Physics, general	0	0	85	3,893	1,647	1,210	–
40.0802	Chemical and atomic/molecular physics	–	–	–	7	0	2	–
40.0804	Elementary particle physics	–	–	–	0	0	0	–
40.0805	Plasma and high-temperature physics	–	–	–	0	0	0	–
40.0806	Nuclear physics	–	–	–	0	4	1	–
40.0807	Optics	–	–	–	23	25	21	–
40.0808	Solid state and low temperature physics	–	–	–	0	9	3	–
40.0899	Physics, other	0	0	0	142	96	39	–
40.99	Physical sciences, other	0	0	50	346	63	36	–
41.	Science technologies	129	125	917	99	19	17	–
41.01	Biological technology	69	1	100	44	2	7	–
41.0101	Biological technology/technician	69	1	100	44	2	7	–
41.02	Nuclear and industrial radiologic technologies	30	45	164	6	0	0	–
41.0204	Radiologic (physical) technology	0	43	8	0	0	0	–
41.0205	Nuclear/nuclear power technology/technician	30	2	139	2	0	0	–
41.0299	Nuclear and industrial radiologic technologies/technicians, other	0	0	17	4	0	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
41.03	Physical science technologies	17	74	497	20	0	0	–
41.0301	Chemical technology/technician	17	74	454	18	0	0	–
41.0399	Physical science technologies/technicians, other	0	0	43	2	0	0	–
41.99	Science technologies, other	13	5	158	29	17	10	–
41.9999	Science technologies/technicians, other	13	5	158	29	17	10	–
42.	Psychology	36	111	1,242	67,299	11,221	3,793	–
42.01	Psychology	4	40	1,105	63,771	4,383	1,608	–
42.02	Clinical psychology	0	0	0	64	1,380	1,275	–
42.03	Cognitive psychology and psycholinguistics	–	–	–	32	43	22	–
42.04	Community psychology	0	0	20	79	267	0	–
42.06	Counseling psychology	0	27	6	269	3,184	282	–
42.07	Developmental and child psychology	0	0	0	732	115	57	–
42.08	Experimental psychology	0	0	0	251	82	90	–
42.09	Industrial and organizational pcychology	0	0	0	156	337	71	–
42.11	Physiological psychology/psychobiology	0	0	0	172	7	28	–
42.16	Social psychology	0	3	0	195	110	34	–
42.17	School psychology	0	0	2	0	609	108	–
42.99	Psychology, other	32	41	109	1,558	724	240	–
43.	Protective services	12,402	5,565	16,993	21,162	1,408	33	–
43.01	Criminal justice and corrections	10,802	3,496	14,415	20,863	1,374	33	–
43.0102	Corrections/correctional administration	1,618	91	720	686	56	0	–
43.0103	Criminal justice/law enforcement administration	1,066	363	2,878	6,738	504	7	–
43.0104	Criminal justice studies	155	52	1,452	10,548	702	26	–
43.0106	Forensic technology/technician	11	29	18	163	38	0	–
43.0107	Law enforcement/police science	4,201	1,912	8,468	1,712	47	0	–
43.0109	Security and loss prevention services	3,290	967	391	47	4	0	–
43.0199	Criminal justice and corrections, other	461	82	480	1,009	23	0	–
43.02	Fire protection	1,459	484	2,045	230	25	0	–
43.0201	Fire protection and safety technology/technician	328	235	1,374	127	12	0	–
43.0202	Fire services administration	9	10	122	90	4	0	–
43.0203	Fire science/firefighting	1,040	225	493	10	0	0	–
43.0299	Fire protection, other	82	14	56	3	9	0	–
43.99	Protective services, other	141	1,585	533	49	9	0	–
44.	Public administration and services	235	589	3,350	17,153	20,806	464	–
44.02	Community organization, resources and services	84	348	1,105	1,241	211	4	–
44.04	Public administration	2	15	100	2,674	6,400	124	–
44.05	Public policy analysis	0	0	14	382	670	70	–
44.07	Social work	54	113	1,422	12,401	13,083	234	–
44.99	Public affairs, other	95	113	709	455	442	32	–
45.	Social sciences and history	22	118	3,978	136,312	13,492	3,469	–
45.01	Social sciences, general	1	95	2,828	7,469	474	70	–
45.02	Anthropology	7	1	50	5,108	913	369	–
45.03	Archeology	4	4	3	95	14	11	–
45.04	Criminology	0	0	76	1,366	83	8	–
45.05	Demography/population studies	0	0	0	0	40	13	–
45.06	Economics	0	1	179	21,405	2,296	880	–
45.0601	Economics, general	0	1	179	20,960	2,173	868	–
45.0602	Applied and resource economics	–	–	–	205	48	5	–
45.0603	Econometrics and quantitative economics	0	0	0	23	0	0	–
45.0604	Development economics and international development	0	0	0	4	35	0	–
45.0605	International economics	0	0	0	61	25	0	–
45.0699	Economics, other	0	0	0	182	15	7	–
45.07	Geography	0	0	26	4,165	646	150	–
45.0701	Geography	0	0	25	4,130	643	150	–
45.0702	Cartography	0	0	1	35	3	0	–
45.08	History	1	3	274	27,821	2,962	692	–
45.0801	History, general	1	3	262	27,668	2,924	673	–
45.0802	American (United States) history	0	0	0	9	5	4	–
45.0803	European history	0	0	0	6	0	0	–
45.0804	History and philosophy of science and technology	0	0	0	9	9	12	–
45.0805	Public/applied history and archival administration	–	–	–	0	8	0	–
45.0899	History, other	0	0	12	129	16	3	–
45.09	International relations and affairs	9	0	252	6,361	1,859	79	–
45.10	Political science and government	0	2	155	37,793	1,939	530	–
45.1001	Political science, general	0	2	155	37,780	1,935	530	–
45.1002	American government and politics	0	0	0	13	4	0	–
45.11	Sociology	0	4	276	21,008	1,524	539	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
45.12	Urban affairs/studies	0	0	14	699	291	74	–
45.99	Social sciences and history, other	0	8	43	2,237	446	64	–
46.	Construction trades	10,709	8,123	1,722	69	0	0	–
46.01	Masons and tile setter	368	341	9	–	–	–	–
46.02	Carpenters	1,339	1,580	289	–	–	–	–
46.03	Electrical and power transmission installation	4,786	3,903	694	1	0	0	–
46.0301	Electrical and power transmission installation, general	440	146	117	–	–	–	–
46.0302	Electrician	1,579	3,392	515	1	0	0	–
46.0303	Lineworker	2,752	265	55	–	–	–	–
46.0399	Electrical and power transmission installation, other	15	100	7	–	–	–	–
46.04	Construction and building finishers and managers	2,296	1,242	278	58	0	0	–
46.0401	Building/property maintenance and manager	2,055	541	81	43	0	0	–
46.0403	Construction/building inspector	116	347	76	–	–	–	–
46.0408	Painting and wall coverer	14	207	0	–	–	–	–
46.0499	Construction and building finishers and managers, other	111	147	121	15	0	0	–
46.05	Plumbers and pipefitters	1,052	704	130	–	–	–	–
46.99	Construction trades, other	868	353	322	10	0	0	–
47.	Mechanics and repairers	22,370	42,428	12,090	105	0	0	–
47.01	Electrical and electronics equipment repair	5,429	6,305	2,682	5	0	0	–
47.0101	Electrical and electronics equipment repair, general	1,257	2,743	1,050	–	–	–	–
47.0102	Business machine repair	284	68	40	–	–	–	–
47.0103	Communications systems installer and repairer	200	313	334	1	0	0	–
47.0104	Computer installer and repairer	1,911	1,208	372	–	–	–	–
47.0105	Industrial electronics installer and repairer	242	981	776	4	0	0	–
47.0106	Major appliance installer and repairer	326	287	60	–	–	–	–
47.0199	Electrical and electronics equipment installer and repairer, other	1,209	705	50	–	–	–	–
47.02	Heating, air conditioning, and refrigeration mechanics and repairer	3,533	7,008	857	–	–	–	–
47.03	Industrial equipment maintenance and repairers	860	1,400	259	1	0	0	–
47.0302	Heavy equipment maintenance and repair	57	279	27	–	–	–	–
47.0303	Industrial machinery maintenance and repairer	554	764	177	–	–	–	–
47.04	Miscellaneous mechanics and repairers	288	619	145	–	–	–	–
47.0401	Instrument calibration and repairer	30	98	18	–	–	–	–
47.0402	Gunsmith	0	188	40	–	–	–	–
47.0403	Locksmith and safe repairer	37	16	0	–	–	–	–
47.0404	Musical instrument repairer	88	87	14	–	–	–	–
47.0408	Watch, clock and jewelry repairer	19	191	69	–	–	–	–
47.0499	Miscellaneous mechanics and repairs, other	114	43	4	–	–	–	–
47.05	Stationary energy sources	81	45	4	–	–	–	–
47.06	Vehicle and mobile equipment mechanics and repairers	11,539	24,674	7,828	99	0	0	–
47.0603	Auto/Automotive body repair	1,266	3,122	352	2	0	0	–
47.0604	Auto/Automotive mechanic/technician	6,038	9,695	2,835	7	0	0	–
47.0605	Diesel engine mechanics and repairer	1,118	3,191	709	–	–	–	–
47.0606	Small engine mechanic and repairer	1,086	1,059	1	–	–	–	–
47.0607	Aircraft mechanic/technician, airframe	507	2,743	1,409	28	0	0	–
47.0608	Aircraft mechanic/technician, powerplant	42	1,240	611	3	0	0	–
47.0609	Aviation systems and avionics maintenance technologist/technician	95	895	1,309	59	0	0	–
47.0611	Motorcycle mechanic and repairer	551	1,029	1	–	–	–	–
47.0699	Vehicle and mobile equipment mechanics and repairers, other	836	1,700	601	–	–	–	–
47.99	Mechanics and repairers, other	642	2,377	315	–	–	–	–
48.	Precision production trades	12,212	16,721	9,824	388	2	0	–
48.01	Drafting	2,464	6,018	7,230	183	0	0	–
48.0101	Drafting, general	1,315	3,807	4,097	149	0	0	–
48.0102	Architectural drafting	134	580	1,027	–	–	–	–
48.0103	Civil/structural drafting	27	20	49	–	–	–	–
48.0104	Electrical/electronics drafting	108	82	122	1	0	0	–
48.0105	Mechanical drafting	319	847	1,142	33	0	0	–
48.0199	Drafting, other	561	682	793	–	–	–	–
48.02	Graphic and printing equipment operators	2,479	1,383	989	201	0	0	–
48.0201	Graphic and printing equipment operators, general	1,011	830	784	184	0	0	–
48.0205	Mechanical typesetter and composer	4	16	6	–	–	–	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
48.0206	Lithographer and platemaker	43	70	68	–	–	–	–
48.0208	Printing press operations	123	73	49	–	–	–	–
48.0211	Computer typography and composition equipment operators	698	65	15	0	0	0	–
48.0212	Desktop publishing equipment operator	328	200	11	0	0	0	–
48.0299	Graphic and printing equipment operators, other	272	109	56	17	0	0	–
48.03	Leatherworkers and upholsterers	350	275	10	–	–	–	–
48.0303	Upholster	341	259	3	–	–	–	–
48.0304	Shoe, boot and leather repairer	2	10	0	–	–	–	–
48.0399	Leatherworkers and upholsterers, other	7	6	7	–	–	–	–
48.05	Precision metal workers	6,452	7,339	1,382	4	0	0	–
48.0501	Machinist/machine technologist	1,229	1,089	275	2	0	0	–
48.0503	Machine shop assistant	855	2,310	597	–	–	–	–
48.0506	Sheet metal workers	197	309	1	–	–	–	–
48.0507	Tool and die maker/technologist	85	338	162	1	0	0	–
48.0508	Welder/welding technologist	4,022	3,183	332	1	0	0	–
48.0599	Precision metal workers, other	64	130	15	–	–	–	–
48.07	Woodworking	289	336	69	0	2	0	–
48.0701	Woodworkers, general	0	28	14	–	–	–	–
48.0702	Furniture designer and maker	89	27	15	0	2	0	–
48.0703	Cabinet maker and millworker	200	248	39	–	–	–	–
48.0799	Woodworking, other	0	33	1	–	–	–	–
48.99	Precision production trades, other	178	1,390	144	–	–	–	–
49.	Transportation and materials moving workers	31,180	1,399	2,297	3,958	495	0	–
49.01	Air transportation workers	2,306	540	1,554	3,635	490	0	–
49.0101	Aviation and airway science	40	24	402	1,560	0	0	–
49.0102	Aircraft pilot and navigator (professional)	768	132	714	854	423	0	–
49.0104	Aviation management	14	3	165	1,155	39	0	–
49.0105	Air traffic control	2	14	112	38	0	0	–
49.0106	Flight attendant	2	39	28	–	–	–	–
49.0107	Aircraft pilot (private)	648	56	6	3	0	0	–
49.0199	Air transportation workers, other	834	272	127	25	28	0	–
49.02	Vehicle and equipment operators	26,527	553	16	–	–	–	–
49.0202	Construction equipment operator	501	93	10	–	–	–	–
49.0205	Truck, bus and other commercial vehicle operators	25,745	421	1	–	–	–	–
49.0299	Vehicle and equipment operators, other	281	39	5	–	–	–	–
49.03	Water transportation workers	1,825	281	56	286	0	0	–
49.0303	Fishing technology/commercial fishing	0	5	1	–	–	–	–
49.0304	Diver (professional)	443	53	25	–	–	–	–
49.0306	Marine maintenance and ship repairer	342	156	20	–	–	–	–
49.0309	Marine science/merchant marine officer	789	35	2	284	0	0	–
49.0399	Water transportation workers, other	251	32	8	2	0	0	–
49.99	Transportation and material moving workers, other	520	25	671	37	5	0	–
50.	Visual and performing arts	3,046	8,338	13,215	48,099	9,481	882	–
50.01	Visual and performing arts	0	51	459	1,518	120	9	–
50.02	Crafts, folk art and artisanry	0	6	0	99	7	0	–
50.03	Dance	0	96	41	812	204	3	–
50.04	Design and applied arts	1,370	4,031	9,045	8,035	437	1	–
50.0401	Design and visual communications	71	38	899	1,348	107	0	–
50.0402	Graphic design, commercial art and illustration	761	1,779	4,749	3,833	238	0	–
50.0404	Industrial design	0	9	187	578	16	0	–
50.0406	Commercial photography	96	185	361	22	0	0	–
50.0407	Fashion design and illustration	237	290	1,241	583	8	1	–
50.0408	Interior design	74	1,662	1,513	1,353	29	0	–
50.0499	Design and applied arts, other	131	68	95	318	39	0	–
50.05	Dramatic/theater arts and stagecraft	98	696	205	5,915	1,292	76	–
50.0501	Drama/theater arts, general	5	246	187	5,609	1,150	76	–
50.0502	Technical theater/theater design and stagecraft	0	6	8	72	38	0	–
50.0503	Acting and directing	56	266	10	129	86	0	–
50.0504	Playwriting and screenwriting	0	0	0	1	0	0	–
50.0505	Drama/theater literature, history and criticism	0	0	0	7	0	0	–
50.0599	Dramatic/theater arts and stagecraft, other	37	178	0	97	18	0	–
50.06	Film/video and photographic arts	340	1,002	911	2,716	568	14	–
50.0601	Film/cinema studies	0	4	0	596	71	8	–
50.0602	Film-video making/cinematography and production	157	143	517	876	285	5	–
50.0605	Photography	163	823	359	1,014	151	1	–
50.0699	Film/video and photographic arts, other	20	32	35	228	61	0	–
50.07	Fine arts and art studies	827	1,087	1,351	20,607	3,109	137	–
50.0701	Art, general	0	778	915	11,401	986	39	–
50.0702	Fine/studio arts	0	17	5	1,619	317	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
50.0703	Art history, criticism and conservation	2	16	46	4,203	798	97	–
50.0704	Arts management	0	1	0	119	111	0	–
50.0705	Drawing	0	0	6	209	40	0	–
50.0706	Intermedia	15	19	321	102	9	0	–
50.0708	Painting	19	46	5	658	214	0	–
50.0709	Sculpture	3	12	1	198	56	0	–
50.0710	Printmaking	31	7	2	103	46	0	–
50.0711	Ceramics arts ant ceramics	0	11	3	212	44	0	–
50.0712	Fiber, textile and weaving arts	–	–	–	118	37	1	–
50.0713	Metal and jewelry arts	757	29	3	75	20	0	–
50.0799	Fine arts and art studies, other	0	151	44	1,390	431	0	–
50.09	Music	411	646	1,085	7,889	3,500	609	–
50.0901	Music, general	0	20	411	3,851	1,090	238	–
50.0902	Music history and literature	0	0	0	58	38	33	–
50.0903	Music-general performance	0	118	103	2,701	1,871	219	–
50.0904	Music theory and composition	1	2	8	209	151	62	–
50.0905	Musicology and ethnomusicology	0	0	0	17	17	4	–
50.0906	Music conducting	0	0	1	2	34	7	–
50.0907	Music-panio and organ performance	0	2	2	80	54	12	–
50.0908	Music-voice and choral/opera performance	0	0	1	126	63	9	–
50.0909	Music business management and merchandising	0	32	226	177	11	0	–
50.0999	Music, other	410	472	333	668	171	25	–
50.99	Visual and performing arts, other	0	721	118	508	244	33	–
51.	Health professions and related sciences	124,840	82,412	89,605	68,426	25,995	1,925	29,494
51.01	Chiropractic (D.C., D.C.M.)	–	–	–	–	–	–	2,799
51.02	Communication disorders sciences and services	68	144	318	4,837	4,022	102	–
51.0201	Communication disorders, general	–	–	–	1,099	799	22	–
51.0202	Audiology/hearing sciences	–	–	–	82	124	2	–
51.0203	Speech-language pathology	0	0	0	703	667	3	–
51.0204	Speech-language pathology and audiology	0	0	10	2,871	2,359	73	–
51.0205	Sign language interpreter	68	144	299	22	0	0	–
51.0299	Communication disorders sciences and services, other	0	0	9	60	73	2	–
51.03	Community health services	150	115	78	463	121	2	–
51.04	Dentistry (D.D.S., D.M.D.)	–	–	–	–	–	–	3,639
51.05	Dental clinical science/graduate dentistry (M.S., Ph.D.)	–	–	–	0	352	27	–
51.06	Dental services	4,680	4,721	4,309	927	48	0	–
51.0601	Dental assistant	4,247	3,916	381	89	1	0	–
51.0602	Dental hygienist	1	386	3,601	833	9	0	–
51.0603	Dental laboratory technician	325	348	319	3	5	0	–
51.0699	Dental services, other	107	71	8	2	33	0	–
51.07	Health and medical administrative services	4,114	4,399	2,031	3,348	3,315	57	–
51.0701	Health system/health services administration	45	7	45	1,688	1,786	36	–
51.0702	Hospital/health facilities administration	0	6	17	803	1,389	2	–
51.0703	Health unit coordinator/ward clerk	965	352	10	–	–	–	–
51.0704	Health unit coordinator/ward supervisor	61	3	10	–	–	–	–
51.0705	Medical office management	1,228	2,195	220	–	–	–	–
51.0706	Medical records administration	346	140	34	635	0	0	–
51.0707	Medical records technology/techncian	376	886	1,561	3	5	6	–
51.0708	Medical transcription	491	604	56	–	–	–	–
51.0799	Health and medical administrative services, other	602	226	78	219	135	13	–
51.08	Health and medical assistants	28,675	12,963	7,692	980	184	0	–
51.0801	Medical assistant	25,839	10,467	2,786	2	0	0	–
51.0802	Medical laboratory assistant	775	88	22	60	13	0	–
51.0803	Occupational therapy assistant	0	139	1,148	1	0	0	–
51.0804	Ophthalmic medical assistant	17	17	2	–	–	–	–
51.0805	Pharmacy technician/assistant	1,149	1,235	212	–	–	–	–
51.0806	Physical therapy assistant	94	110	2,374	–	–	–	–
51.0807	Physician assistant	0	170	152	858	171	0	–
51.0808	Veterinarian assistant/animal health technician	261	302	972	48	0	0	–
51.0899	Health and medical assistants, other	540	435	24	11	0	0	–
51.09	Health and medical diagnostic and treatment services	11,910	13,752	11,011	1,278	95	0	–
51.0901	Cardiovascular technology/technician	65	196	286	90	1	0	–
51.0902	Electrocardiograph technology/technician	581	167	18	2	0	0	–
51.0903	Electroencephalograph technology/technician	205	6	58	1	0	0	–
51.0904	Emergency medical technology/technician	9,393	2,869	469	33	4	0	–
51.0905	Nuclear medical technology/technician	17	131	293	155	0	0	–
51.0906	Perfusion technology/technician	0	0	0	21	0	0	–
51.0907	Medical radiologic technology/technician	205	3,196	5,803	505	11	0	–
51.0908	Respiratory therapy technician	482	3,551	3,497	339	0	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
51.0909	Surgical/operating room technician	210	2,641	387	–	–	–	–
51.0910	Diagnostic medical sonography	469	840	219	35	0	0	–
51.0999	Health and medical diagnostic and treatment services, other	269	155	161	67	79	0	–
51.10	Health and medical laboratory technologies	1,676	1,141	2,363	2,561	388	111	–
51.1001	Blood bank technology/technician	204	138	0	0	3	0	–
51.1002	Cytotechnologist	4	30	1	102	0	0	–
51.1003	Hematology technology/technician	255	8	0	–	–	–	–
51.1004	Medical laboratory technician	242	619	2,242	105	1	0	–
51.1005	Medical technology	12	129	22	2,235	69	3	–
51.1006	Optometric/ophthalmic laboratory technician	34	69	24	–	–	–	–
51.1099	Health and medical laboratory technologies/technicians, other	925	148	74	119	315	108	–
51.11	Health and medical preparatory program	132	104	671	1,816	28	14	–
51.1101	Pre-dentistry studies	0	3	32	176	3	0	–
51.1102	Pre-medicine studies	0	48	258	736	0	0	–
51.1103	Pre-pharmacy studies	0	0	131	400	0	0	–
51.1104	Pre-veterinary studies	0	1	92	266	2	0	–
51.1199	Health and medical preparatory programs, other	132	52	158	238	23	14	–
51.12	Medicine (M.D.)	–	–	–	–	–	–	15,798
51.13	Medical basic sciences	330	0	17	247	249	313	–
51.1301	Medical anatomy	–	–	–	0	4	10	–
51.1302	Medical biochemistry	–	–	–	1	28	49	–
51.1304	Medical physics/biophysics	–	–	–	4	4	3	–
51.1305	Medical cell biology	–	–	–	9	1	11	–
51.1306	Medical genetics	–	–	–	0	16	8	–
51.1307	Medical immunology	–	–	–	0	6	33	–
51.1308	Medical microbiology	–	–	–	29	23	32	–
51.1309	Medical molecular biology	–	–	–	0	0	2	–
51.1310	Medical neurobiology	–	–	–	0	3	16	–
51.1311	Medical nutrition	0	0	0	31	10	0	–
51.1312	Medical pathology	–	–	–	0	17	31	–
51.1313	Medical physiology	0	0	17	0	28	34	–
51.1314	Medical toxicology	–	–	–	5	0	5	–
51.1399	Medical basic sciences, other	330	0	0	168	109	79	–
51.14	Medical clinical sciences (M.S., Ph.D.)	73	7	0	10	44	12	–
51.15	Mental health services	1,878	1,375	2,809	537	389	10	–
51.1501	Alcohol/drug abuse counseling	330	697	880	88	55	4	–
51.1502	Psychiatric/mental health services technician	147	571	1,472	153	49	0	–
51.1503	Clinical and medical social work	1	0	3	82	97	6	–
51.1599	Mental health services, other	1,400	107	461	214	188	0	–
51.16	Nursing	67,179	42,150	56,321	35,677	8,252	396	–
51.1601	Nursing (R.N. training)	318	7,861	54,144	32,875	4,017	255	–
51.1602	Nursing administration (post-R.N.)	0	110	31	169	342	9	–
51.1603	Nursing, adult health (post-R.N.)	–	–	–	119	76	0	–
51.1604	Nursing anesthetist (post-R.N.)	37	33	2	40	436	0	–
51.1605	Nursing, family practice (post-R.N.)	0	0	18	0	58	0	–
51.1606	Nursing, maternal/child health (post-R.N.)	0	0	1	0	305	5	–
51.1607	Nursing midwifery (post-R.N.)	0	67	0	0	25	0	–
51.1608	Nursing science (post-R.N.)	–	–	–	716	574	60	–
51.1609	Nursing, pediatric (post-R.N.)	–	–	–	0	24	0	–
51.1610	Nursing, psychiatric/mental health (post-R.N.)	0	31	13	0	177	0	–
51.1611	Nursing, public health (post-R.N.)	–	–	–	1	280	4	–
51.1612	Nursing, surgical (post-R.N.)	39	0	49	2	309	0	–
51.1613	Practical nurse (L.P.N. training)	2,084	30,202	1,009	54	0	0	–
51.1614	Nurse assistant/aide	21,264	2,291	228	–	–	–	–
51.1615	Home health aide (post-R.N.)	1,673	122	6	–	–	–	–
51.1699	Nursing, other	41,764	1,433	820	1,701	1,629	63	–
51.17	Optometry (O.D.)	–	–	–	–	–	–	1,172
51.18	Ophthalmic/optometric services	720	378	451	183	7	1	–
51.1801	Opticianry/Dispensing optician	236	253	212	–	–	–	–
51.1802	Optical technician/assistant	416	97	210	–	–	–	–
51.1803	Ophthalmic medical technologist	29	14	11	–	–	–	–
51.1804	Orthopedics	0	3	0	–	–	–	–
51.1899	Ophthalmic/optometric services, other	39	11	18	183	7	1	–
51.19	Osteopathic medicine (D.O.)	–	–	–	–	–	–	1,627
51.20	Pharmacy	0	0	37	5,550	268	203	1,904
51.2001	Pharmacy (B. Pharm., Pharm.D.)	–	–	–	5,018	2	12	1,904
51.2002	Pharmacy administration and pharmaceutics	0	0	29	0	33	28	–
51.2003	Medical pharmacology and pharmaceutical science	–	–	–	31	55	84	–
51.2099	Pharmacy, other	0	0	8	501	178	79	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First professional degrees
51.21	Podiatry (D.P.M., D.P., Pod.D.)	–	–	–	–	–	–	476
51.22	Public health	0	0	0	389	1,889	100	–
51.2202	Environmental health	0	0	105	347	118	12	–
51.2203	Epidemiology	0	0	0	0	239	62	–
51.2204	Health and medical biostatistics	–	–	–	0	20	5	–
51.2205	Health physics/radiologic health	0	0	20	6	26	1	–
51.2206	Occupational health and industrial hygiene	0	0	42	48	28	1	–
51.2207	Public health education and promotion	–	–	–	82	206	15	–
51.2299	Public health, other	–	–	–	108	479	49	–
51.23	Rehabilitation/therapeutic	268	253	619	6,698	3,689	37	–
51.2301	Art therapy	0	1	1	59	202	0	–
51.2302	Dance therapy	–	–	–	1	34	0	–
51.2303	Hypnotherapy	189	0	0	–	–	–	–
51.2304	Movement therapy	9	0	0	0	8	0	–
51.2305	Music therapy	0	0	0	165	16	0	–
51.2306	Occupational therapy	0	28	207	2,531	821	3	–
51.2307	Orthotics/prosthetics	0	138	19	34	0	0	–
51.2308	Physical therapy	14	38	292	2,969	2,202	9	–
51.2309	Recreational therapy	35	0	61	125	3	5	–
51.2310	Vocational rehabilitation counseling	0	7	11	178	578	5	–
51.2399	Rehabilitation/therapeutic services, other	2	43	28	646	325	15	–
51.24	Veterinary medicine (D.V.M.)	–	–	–	–	–	–	2,057
51.25	Veterinary clinical sciences (M.S., Ph.D.)	0	0	0	128	183	132	–
51.26	Miscellaneous health aides	1,880	228	127	0	0	0	–
51.27	Miscellaneous health professions	0	80	24	69	186	19	64
51.2701	Acupuncture and oriental medicine	0	80	2	21	163	16	–
51.2702	Medical dietician	0	0	22	15	5	0	–
51.2703	Medical illustrating	–	–	–	38	26	0	–
51.2704	Naturopathic medicine	0	0	0	0	0	0	64
51.2705	Psychoanalysis	0	0	0	0	1	3	–
51.99	Health professions and related sciences, other	1,439	634	583	2,121	1,076	224	–
52	Business management and administrative services	100,677	68,080	101,440	256,610	90,286	1,408	–
52.01	Business, general	3,080	1,827	11,802	27,869	12,829	313	–
52.02	Business administration and management	2,732	3,611	31,132	91,276	49,418	680	–
52.0201	Business administration and management, general	1,473	2,584	26,699	84,241	46,279	665	–
52.0202	Purchasing, procurement and contracts management	85	16	94	344	436	0	–
52.0203	Logistics and materials management	150	18	155	599	172	0	–
52.0204	Office supervision and management	881	775	2,065	883	41	0	–
52.0205	Operations management and supervision	52	94	605	1,913	602	0	–
52.0206	Non-profit and public management	6	0	31	49	29	0	–
52.0299	Business administration and management, other	65	124	1,534	3,318	1,889	15	–
52.03	Accounting	13,746	8,492	16,940	80,429	3,949	69	–
52.0301	Accounting	8,868	2,405	7,104	80,275	3,864	68	–
52.0302	Accounting technician	3,563	4,923	9,454	89	0	0	–
52.0399	Accounting, other	1,315	1,164	382	65	84	1	–
52.04	Administrative and secretarial services	40,512	35,219	20,896	1,378	1	0	–
52.0401	Administrative assistant/secretarial science, general	12,347	12,209	11,282	1,075	1	0	–
52.0402	Executive assistant/secretary	2,075	2,374	2,919	157	0	0	–
52.0403	Legal administrative assistant/secretary	1,268	5,288	1,880	28	0	0	–
52.0404	Medical administrative assistant/secretary	4,882	4,584	1,740	0	0	0	–
52.0405	Court reporter	91	1,479	701	24	0	0	–
52.0406	Receptionist	708	248	10	–	–	–	–
52.0407	Information processing/data entry technician	5,070	1,917	842	70	0	0	–
52.0408	General office/clerical and typing services	10,080	4,689	827	17	0	0	–
52.0499	Administrative and secretarial services, other	3,973	2,493	434	9	0	0	–
52.05	Business communications	153	70	54	261	233	0	–
52.06	Business/managerial economics	9	10	5	3,773	209	42	–
52.07	Enterprise management and operation	95	255	445	434	53	0	–
52.0701	Enterprise management and operation, general	89	235	418	310	52	0	–
52.0702	Franchise operation	6	9	2	0	0	0	–
52.0799	Enterprise management operation, other	0	11	25	124	1	0	–
52.08	Financial management and services	6,121	2,002	1,231	24,695	5,544	64	–
52.0801	Finance, general	31	90	551	22,747	4,838	52	–
52.0802	Actuarial science	0	20	0	393	62	0	–
52.0803	Banking and financial support services	2,409	950	596	376	161	1	–
52.0804	Financial planning	3,302	7	4	24	126	0	–
52.0805	Insurance and risk management	111	925	9	634	52	4	–
52.0806	International finance	0	0	0	14	13	0	–
52.0807	Investments and securities	202	0	0	324	217	0	–

– Data not available.

Table 3. Awards and degrees, by field of study, 1992-93 — Continued

Classification of Instructional Programs (CIP) codes and titles		Awards, curriculums of under 1 year	1- to 4- year awards	Associate degrees	Bachelor's degrees requiring 4 or 5 years	Master's degrees	Doctoral degrees	First profes-sional degrees
52.0808	Public finance	0	0	0	13	15	0	–
52.0899	Financial management and services, other	66	10	71	160	62	7	–
52.09	Hospitality services management	4,966	2,980	3,875	5,946	533	4	–
52.0901	Hospitality/administration management	90	191	331	1,141	122	0	–
52.0902	Hotel/motel management	1,411	1,431	2,261	3,834	220	4	–
52.0903	Travel-tourism management	3,173	833	992	265	60	0	–
52.0999	Hospitality services management, other	292	525	291	706	131	0	–
52.10	Human resources management	218	737	861	7,470	3,691	54	–
52.1001	Human resources management	79	270	570	5,219	2,059	19	–
52.1002	Labor/personnel relations and studies	1	464	276	1,273	654	16	–
52.1003	Organizational behavior studies	0	0	2	936	813	19	–
52.1099	Human resources management, other	138	3	13	42	165	0	–
52.11	International business	83	17	57	2,585	2,816	12	–
52.12	Business information and data processing services	8,204	4,623	6,676	5,799	1,800	7	–
52.1201	Management information systems and business data processing, general	2,589	936	2,730	5,378	1,592	7	–
52.1202	Business computer programming/programmer	1,212	1,467	2,893	31	0	0	–
52.1203	Business systems analysis and design	47	40	252	128	8	0	–
52.1204	Business systems networking and telecommunications	63	104	20	103	182	0	–
52.1205	Business computer facilities operator	1,531	993	365	57	0	0	–
52.1299	Business information and data processing services, other	2,762	1,083	416	102	18	0	–
52.13	Business quantitative methods and management science	5	23	158	2,178	926	36	–
52.1301	Management science	5	23	148	1,513	470	25	–
52.1302	Business statistics	0	0	0	38	29	8	–
52.1399	Business quantitative methods and management science	0	0	10	627	427	3	–
52.14	Marketing management and research	110	278	1,602	28,267	2,204	39	–
52.1401	Business marketing and marketing management	84	161	1,478	26,795	1,862	36	–
52.1402	Marketing research	–	–	–	112	33	0	–
52.1403	International business marketing	4	14	17	37	23	0	–
52.1499	Marketing management and research, other	22	103	107	1,323	286	3	–
52.15	Real estate	12,643	4,869	2,017	680	348	1	–
52.16	Taxation	1,071	5	1	2	1,559	0	–
52.99	Business management and administrative services, other	6,959	992	4,319	3,804	4,154	82	–
95.	CIP program codes not reported	45,837	20,371	7,814	10,582	1,791	225	528

– Data not available.

Chapter IV. Estimating Occupational Replacement Needs

Information about projected job openings by occupation—openings that result from employment growth or the need to replace workers who leave an occupation has many important applications. For example, students and vocational counselors use such information to make informed decisions about career choices; planners of training programs use it to develop education policies; and personnel specialists use it in planning their recruiting efforts. BLS has provided information about employment growth biennially through its employment projections program over the past five decades and in 1992 resumed estimating job openings resulting from replacement needs.

After completing a comprehensive research effort, BLS concluded that two definitions and two estimates of separations were needed in order to provide appropriate replacement needs information for different users. The first type of estimate, *total separations*, measures all individuals who leave their occupation. The second, *net separations*, measures the net movements of new and experienced workers into and out of occupations. As discussed below, both measures of separations are developed from the Current Population Survey, but use different data elements.

Concepts and definitions

During the past several decades a variety of concepts have been used to calculate estimates of occupational replacement needs and job openings. These different concepts result in significantly different estimates of separations for the same occupation that often have confused users of the information. This section briefly summarizes the concepts within current BLS replacement needs data in an effort to eliminate any confusion that may exist.

Total separations. Total separations identify the flow of individuals leaving an occupation, for any reason whatsoever, without regard to persons entering the occupation. Total separations are the largest measure of separations. During a given period, some individuals may leave an occupation for a variety of reasons and must be replaced. Some become employed in a different occupation as a result of a promotion, a desire to change careers, the loss of an existing job, the need for a different job while attending school or training or caring for a family, or some other reason. Others who leave an occupation stop working altogether because they retire, desire more leisure time or time for an extended vacation, assume family responsibilities, return to school, move out of the geographic area, become ill, or for some other reason. If employment in an occupation is to grow or remain the same, those individuals who left the occupation must be replaced. In most cases, total occupational separations are thus replacement needs and a source of job openings. If employment is declining, however, occupational separations exceed replacement needs by the amount of decline in employment because some persons who leave the occupation are not replaced. (Individuals who change employers but remain employed in the same occupation are not included in counts of replacement needs because job changes by these individuals have no impact on the number of openings for persons desiring to enter an occupation.)

Net separations. For any occupation, net separations differ from total separations in that they summarize movements of workers into and out of the occupation over a specific period. If employment is not declining, net separations approximate the number of persons who permanently leave an occupation: They quantify the need for new entrants, and if training is required, identify minimum training requirements.

Employment data, by age, for two points in time are used to estimate net separations. For example, occupational employment, by age, is prepared for a base year and for a second year 5 years later. Employment figures for each age group in the base year are then compared with employment figures for the group that is 5 years older. For example, employment in the age group 55-59 in the base year is compared with employment in the age group 60-64 in the second year for a given occupation. If employment has increased from the one group to the other, then the increase measures the net entrants into the occupation for the second group, and the net separations from the occupation for that group is zero. If, instead, employment has declined across the two age groups, the decline is recorded as the net separations from that occupation for the second age group. The total net separations from the occupation in question is then the sum of the net separations from that occupation for all age groups.

It is important to note that within any age group, individuals may have done any of the following to stop being included in employment data for the area: Left the occupation and started working in another occupation, stopped working altogether, or left the geographic area. Similarly, individuals entering the occupation may have been working in another occupation, may not have been working at all, or may have come from another geographic area, in order to be added to the number of employees working in the area. The change measured over the period in question thus reveals only whether there were more or fewer entrants than separations and tells nothing about the magnitude of the total entrants, total separations, or any of their components. That is, the change indicates whether the size of the original age group increased or decreased, but it indicates nothing about the specific actions of individuals comprising the group.

Replacement needs. In developing estimates of replacement needs, the distinction between total and net separations and replacement needs pertaining to an occupation must not be overlooked. When employment in an occupation remains the same or increases over a given period, replacement needs equal separations. Conversely, when employment declines, replacement needs are less than separations because some individuals leaving an occupation are not replaced.

During a period when employment in an occupation declines, total separations will be greater than they would be if employment increased because more individuals lose their jobs. Net separations would be greater not only because more individuals leave, but also because fewer enter the occupation. A decline in employment represents individuals who left an occupation and were not replaced; therefore, replacement needs during a time of declining employment are determined by reducing observed separations by the decline in employment.

Although it is conceptually possible that employment could decline to zero, the possibility is remote, especially with national data. In such an unlikely scenario, separations would equal the previous number of employees because all lost their jobs, and replacement needs would be zero (replacement needs = separations - employment decline = 0). During periods of employment declines, displaced workers are available to reenter the occupation later and thus may reduce the need for training additional workers.

Developing measures of total separations

All individuals who leave an occupation—those who transfer to another occupation or who stop working for any reason—must be included in a measure of total separations. Producing such a measure requires longitudinal data that include information about individuals at two points in time. From the late 1970s to the early 1980s, BLS developed a procedure, using CPS data, for estimating the total number of job openings arising from workers who leave their occupation over a 1-year period. Annual data are preferable to data with other periodicities because most data on training program completions are compiled on an annual basis. Annual total separation data thus facilitate analyses of occupational supply and demand.

Briefly, the method of measuring total separations consists of creating a matched sample over a 1-year period from the CPS. Matched data are created for each of 12 months and then are combined, resulting in a sample of about 500,000 persons aged 15 and older in the initial year. For this report, matched data for 1990-91 dealing with changes in labor force status were merged with data on occupational transfers from a special study conducted as part of the January 1991 CPS, the latest available survey of this nature at the time. Occupational transfer data from the January 1991 CPS were used because matched CPS data overstate the number of workers who change occupations. The excessively large estimate of occupational transfers in matched CPS data occurs because individuals may respond differently to the same CPS question about their occupation, responses may be recorded differently by interviewers collecting the data, or recorded information may be interpreted and coded differently by clerks preparing files for computer processing. All these actions result in a different occupation being recorded in the second year when, in fact, no change of occupation occurred. The results of combining 1990-91 matched CPS data and occupational transfer data from the January 1991 CPS are termed *merged data* and provide a composite description of movements into, out of, and between occupations over a 1-year period. The procedure results in data that identify the numbers and types of separations and the characteristics of workers who change occupations, become unemployed, or leave the labor force.

Total separation data for occupations with fewer than 50,000 employees in 1990 were judged unreliable because of the limited number of observations in the sample. Data for the remaining occupations were examined individually, and if data identifying specific reasons for leaving the occupation appeared suspect, another detailed occupational group was selected to serve as a proxy and provide substitute data.

The CPS is conducted primarily to obtain current data on the labor force status of individuals, rather than data that measure changes over time. There are significant limitations to the data that describe change as a result. The CPS is a household survey that obtains data about persons living at specific addresses. One limitation to the matched sample is that information can be developed only from the responses of individuals who do not change their

Table 4. Net separation data by age group, 1989-94

(Numbers in thousands)

1989 employment		1994 employment		Net change	Net separations, 1989-94	Separation rate 1989-94
Age (years)	Number	Age	Number			
Registered nurses						
16-99	1538	—	1804	266	76	4.9
		16-20	3	3	0	0
16-19	1	21-24	70	69	0	0
20-24	101	25-29	212	111	0	0
25-29	249	30-34	307	58	0	0
30-34	308	35-39	347	39	0	0
35-39	258	40-44	309	51	0	0
40-44	210	45-49	219	9	0	0
45-49	150	50-54	151	2	0	0
50-54	111	55-59	105	-7	7	6.2
55-59	88	60-64	58	-30	30	34.1
60-64	46	65-69	17	-28	28	62.4
65-69	12	70-74	4	-8	8	66.1
70-74	3	75-79	1	-2	2	63.7
75-99	1	80-99	1	0	0	41.2
Waiters and waitresses						
16-99	1383	—	1396	13	355	25.7
		16-20	313	313	0	0
16-19	251	21-24	306	55	0	0
20-24	388	25-29	225	-164	164	42.2
25-29	241	30-34	180	-62	62	25.5
30-34	154	35-39	134	-20	20	13.3
35-39	105	40-44	80	-25	25	23.9
40-44	71	45-49	57	-14	14	19.7
45-49	53	50-54	39	-14	14	27.2
50-54	45	55-59	27	-19	19	40.9
55-59	37	60-64	24	-13	13	35.6
60-64	24	65-69	9	-15	15	61.8
65-69	10	70-74	2	-7	7	76.8
70-74	3	75-79	1	-2	2	67.8
75-99	1	80-99	1	0	0	8.3

Note: 1989 data are averages of 1985, 86, 87, 88 and 1989; 1994 are averages of 1990, 91, 92, 93 and 1994.

residence. Movers tend to change their labor force status more than nonmovers; hence, the separation rates are biased downward because movers are not included. Separation rates are biased downward also because the CPS excludes individuals who die between surveys.

By contrast, response and coding errors bias the separation rates upward. For example, if employed persons were incorrectly classified as not in the labor force during the second survey, the matched data would indicate movement where none occurred. Although the net effect of the various biases on the movements is not known, their impact is offsetting and not concentrated by occupation.

It must be emphasized that total separation rates developed from merged CPS data are not measured rates based on longitudinal data about individuals, but rather, are a composite estimate of movements from occupations based on CPS data from two distinct sources. However, the rates are occupation specific and are extremely valuable for describing the labor market.

Developing measures of net separations

Because the classification system used in the CPS has remained constant since 1983, a comprehensive measure of occupation-specific net separations can be developed by using changes in age groups over a 5-year period. When the size of a group increases, a measure of net entrants is recorded; when it declines, net separations are identified. Net changes in an age group capture the net effect of transfers into and out of occupations, immigration, and emigration, as well as of labor force entrants and separations, including deaths. A 5-year period was chosen so as to reduce the impact of cyclical variations that might accompany a shorter period. Data for other periods can be developed, however. Data also can be developed by industry, educational level, sex, and a variety of other demographic variables. This new "cohort" technique thus provides a powerful tool for analyzing labor market changes.

Employment data for appropriate age groups, by occupation, were developed for 1985-90. 1986-91, 1987-92, 1988-93, and 1989-94. Initially, approximately 850,000 records containing information on occupation, age, and many other characteristics for all employed persons in all months of 1985 were combined, and occupational employment by age group was tabulated. The process was repeated to obtain data for desired age groups in 1990. To increase the sample size and reduce cyclical fluctuations, data for the same age groups as recorded for 1985 were developed for 1986, 1987, 1988 and 1989, and data for the age groups used in 1990 were developed for 1991, 1992, 1993 and 1994. Data on employment by occupation, by age group, then were averaged and used to prepare the data presented in this chapter. To simplify the presentation, all references to 1989 data represent averages for 1985, 1986, 1987, 1988 and 1989, and references to 1994 data represent averages for 1990, 1991, 1992, 1993, and 1994.

Net leavers in most occupations occur only in the older age groups, generally above age 45. This pattern typically describes individuals leaving in large numbers to retire. A different pattern displayed in some occupations is the vast majority of all net separations taking place in

Table 5. Net separations in selected occupations, 1989-94

(Numbers in thousands)

Current Population Survey occupation	Number employed	Age group (years)												
		16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79
Mathematical and Computer scientists	697	0	0	0	0	0	0	0	6	12	6	1	0	0
Computer systems analysts	452	0	0	0	0	0	0	0	0	5	3	0	0	0
Operations and systems researchers	199	0	0	0	2	6	1	0	4	5	3	1	0	0
Actuaries	13	0	0	0	0	0	0	0	0	1	0	0	0	0
Statisticians	27	0	0	1	1	1	1	0	1	1	0	0	0	0
Mathematical scientists, n.e.c.[1]	6	0	0	0	0	1	0	0	0	0	0	0	0	0

[1] n.e.c. = not elsewhere classified.

the youngest age groups. In this case, large numbers of workers probably obtained employment in the occupation when they first entered the work force. When they were ready to begin full-time jobs, or when they qualified for higher paying jobs, they transferred to another occupation. In both patterns, the net separations quantify the number of persons who left the occupation permanently. Table 4, which illustrates how net separations for registered nurses and for waiters and waitresses were calculated, also shows these different patterns.

In the table, employment data by age group for registered nurses and for waiters and waitresses in 1989 are compared with data in the same categories for a 5-year-older group in 1994. For example, the number of registered nurses aged 20-24 in 1989 are compared with the number of registered nurses aged 25-29 in 1994, and the difference is calculated. If the difference is positive, more individuals aged 20-24 in 1989 entered than left the occupation. Nothing is known about the magnitude of persons transferring into the occupation, coming from outside the labor force, or coming from another country, and nothing is known about the magnitude of persons transferring out of the occupation, leaving the labor force, or leaving the country. The difference between the two groups simply identifies the amount by which total entrants exceed total leavers. If, by contrast, the difference is negative, more individuals left than entered the occupation. Only a negative difference results in a measure of net separations. Positive differences are recorded as zero net separations for the age group. The separation rate for an age group is calculated by dividing net separations by 1989 employment in the age group. Net separations for all age groups were totaled and divided by total employment in 1989 to obtain the 5-year net separation rate for the occupation.

Table 4 also presents information on the percentage of leavers in each age group for registered nurses and for waiters and waitresses. This measure is calculated by dividing net leavers in the age group by 1989 employment for that age group. Information about the percentage of leavers in each age group is especially valuable because it permits estimates of net leavers in the future, which will be discussed later.

Registered nurses and waiters and waitresses are large occupations, so the CPS sample for these occupations provides quite reliable employment data for each age group in them. For small occupations, however, such as actuaries, statisticians, and mathematical scientists not elsewhere classified (n.e.c.), shown in table 5, the sample is too small and the net separation data are unreliable. For example, statisticians have an irregular distribution of net separations among the age groups, and the net separation rate of about 25 percent is inconsistent with rates for other professional occupations.

To obtain a separation rate for each detailed CPS occupation, one of two procedures was used when an occupation was judged to be unreliable on the basis of its data. When a larger detailed occupation had characteristics similar to those of the occupation in question, the larger occupation was chosen as a proxy for it, and the separation and employment data for the proxy occupation were substituted for the unreliable data and were used to calculate separation rates. When there was no larger detailed occupation with characteristics similar to those of the occupation in question, separation and employment data for a summary occupation group were substituted for the unreliable data. In this case, the procedure for determining separation rates was not as straightforward. Note in table 5 that for the summary occupation group, mathematical and computer scientists, no net separations are measured in the data until age 50. Yet, of the detailed occupations comprising the group, actuaries, statisticians, and mathematical scientists, n.e.c., exhibit net separations prior to that age. The summary occupation does not register those separations because total net entrants in the other detailed occupations—computer systems analysts and operations and systems analysts—exceeded the total of net separations among actuaries, statisticians, and mathematical scientists, n.e.c. To exclude the measure of net separations from the summary occupation, however, would result in an understatement of separations from detailed occupations. To overcome this limitation, net separations in each age group for summary occupations were calculated by summing the net separations for each detailed occupation in that age group. Thus, the net separation data for each

Table 6. Net separations in selected occupations, adjusted summary occupation group, 1989-94

(Numbers in thousands)

Current Population Survey occupation	Number employed	Age group (years)												
		16-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79
Mathematical and Computer scientists	697	0	0	2	2	7	3	1	6	12	6	1	0	0
Computer systems analysts	452	0	0	0	0	0	0	0	0	5	3	0	0	0
Operations and systems researchers	199	0	0	0	2	6	1	0	4	5	3	1	0	0
Actuaries	13	0	0	0	0	0	0	0	0	1	0	0	0	0
Statisticians	27	0	0	1	1	1	1	0	1	1	0	0	0	0
Mathematical scientists, n.e.c.[1]	6	0	0	0	0	1	0	0	0	0	0	0	0	0

[1] n.e.c. = not elsewhere classified.

age group for the summary occupation group, mathematical and computer scientists, in table 6 is the sum of the data measured for computer systems analysts, operations and systems analysts, actuaries, statisticians, and mathematical scientists, n.e.c. (Because unrounded data for detailed occupations are used, the totals shown may not be the sum of the data presented in table 5.)

The adjusted separation data for the summary group, mathematical and computer scientists, were used to calculate separation rates that became the proxy separation rates for actuaries, statisticians, and mathematical scientists, n.e.c. Net separations for other summary occupations found throughout the occupational structure of the economy were developed in the same manner as for mathematical and computer scientists.

Projected replacement rates

Thus far, all information presented about separations has been descriptive and retrospective; that is, it has described what has occurred in the past. The Bureau's Employment Projections program, however, focuses on future opportunities, a purpose that requires projections of employment change and, in addition, projections of replacement needs due to total and net separations.

Total replacement rates. Total separation rates for all detailed occupations were developed from merged CPS data for the period 1990-91. As described earlier, total separation rates from proxy occupations were substituted for small occupations because the data appeared unreliable. If employment in the occupation in question was the same or increased from 1990 to 1991, the 1990-91 total separation rate also was the replacement rate and should be used to estimate replacement needs during a projection period. However, if employment declined, the replacement rate was calculated by subtracting the employment decline from the separations. Total replacement rates for 1990-91 were used without adjustment for the 1994-2005 projection period. Although labor market conditions affect the replacement rates, attempts to adjust the rates would be fraught with difficulties because not enough is known about how cyclical factors and other labor market conditions affect the rates.

Net replacement rates. To develop a net separation rate for an occupation, employment figures for that occupation in a given age group in 1989 were compared with employment in the occupation in 1994 for a group that was 5 years older. As noted earlier, data for 1989 actually consist of the average of data for 1985, 1986, 1987, 1988 and 1989, and data for 1994 consist of averages for 1990, 1991, 1992, 1993, and 1994. If employment for the group increased, no net separations occurred, and separations were recorded as zero. If employment declined, the number was recorded as net separations for that age group. The 5-year net separation rate for the age group was calculated by dividing the number of net separations by employment in 1989. (See table 4.) The 5-year net separation rates for 1989-94 for each age group could then be applied to employment in future years to obtain a projection of net separations.

Between 1989 and 1994, employment in most occupations increased or remained the same, and the 1989-94 net separation rates, by age, were used without adjustment to estimate replacement needs during the projection period. If employment declined, however, one of several adjustments to the age-specific separation rates was used to obtain a replacement rate that reduced the occupational separation rate by the rate of decline in employment. When the employment decline was less than the number of net separations among persons aged 16-49 in 1989, the number of net separations among persons aged 16-49 was reduced by the employment decline. The decline was distributed in proportion to the number of net separations in each age subgroup in the group aged 16-49. This was the most frequently used technique; it confines the adjustments to the ages most affected by adverse economic conditions. Older workers are more likely to remain employed until they retire. In most of the remaining cases, the net separations were reduced in a like fashion for persons aged 16-54 or persons aged 16-65, depending on the distribution of net separations in the occupation and the amount by which employment declined. The adjusted age-specific rates then were used to calculate future net replacement needs for persons employed in 1994.

Showing data for the persons employed as registered nurses in 1994, table 7 illustrates the method for calculating net leavers over the period 1994-2005. First, net leavers were calculated for 1994-99 by multiplying 1994 employment obtained from the CPS for each age group by the replacement rate in 1989-94 for the same age group. Before net leavers in 1999-2004 were calculated, employment in 1995 for each age group was estimated by identifying employment in 1994 for a 5-year-younger age group and subtracting any projected net leavers for the period 1994-99. For example, table 7 shows the 1999 employment figure for registered nurses aged 55-59 to be 142,000. This estimate was arrived at by identifying the 1994 employment figure for nurses aged 50-54 (151,000) and subtracting the 9,000 net leavers in 1994-99 from that age group. When employment for each age group for 1999 was developed, the resulting figure was multiplied by the replacement rate for that age group to estimate net leavers for 1999-2004. The process was repeated to obtain employment for each age group in 2004 and to estimate leavers in 2004-2009. Summing the number of net leavers for each of the 5-year groups provided an estimate of net leavers for the 15-year period 1994-2009. Net leavers over the 11-year projection period 1994-2005 were determined by combining estimates for the 5-year periods 1994-99 and 1999-2004 with one-fifth of the 2004-2005 estimate. Dividing the net separations for 1994-2005 by 11 yielded annual average net separations; the annual average net separations were divided by 1994 employment to yield an annual average net separation rate.

Table 7. Net replacement data for registered nurses by age group, 1994-2005

(Numbers in thousands)

1994 employment		Percent replaced, 1989-94	Net leavers 1994-99	1999 employment		Net leavers, 1999-2004	2004 employment		Net leavers, 2004-09
Age (years)	Number			Age (years)	Number		Age (years)	Number	
16-99......	1804	—	96	16-99......	—	124	16-99......	—	170
16-19...	1	0	0	16-19...	0	0	16-19...	0	0
20-24...	72	0	0	20-24...	1	0	20-24...	0	0
25-29...	212	0	0	25-29...	72	0	25-29...	1	0
30-34...	307	0	0	30-34...	212	0	30-34...	72	0
35-39...	347	0	0	35-39...	307	0	35-39...	212	0
40-44...	309	0	0	40-44...	347	0	40-44...	307	0
45-49...	219	0	0	45-49...	309	0	45-49...	347	0
50-54...	151	6.2	9	50-54...	219	14	50-54...	309	19
55-59...	105	34.1	36	55-59...	142	48	55-59...	205	70
60-64...	58	62.4	36	60-64...	69	43	60-64...	94	59
65-69...	17	66.1	11	65-69...	22	15	65-69...	26	17
70-74...	4	63.7	3	70-74...	6	4	70-74...	7	4
74-99...	2	41.2	1	74-99...	1	0	74-99...	2	1

Note: 1994 data are averages of 1990, 91, 92, 93 and 1994.

New entrants—that is, individuals who were younger than age 16 in 1994 but who can be expected to join the group of employed persons after 1994—are not included in the estimate of separations for 1994-2005. If they were included, estimates of separations with net transfers in the younger age groups—such as those for waiters and waitresses—would be larger.

Replacement rates based on the Occupational Employment Statistics survey

The preceding section described procedures for estimating annual average replacement ates of total and net separation for detailed CPS occupations. The BLS projections program uses an industry-occupation matrix to estimate current and projected employment data that are based on the occupational classification system of the Occupational Employment Statistics (OES) survey. Current and projected occupational employment data based on the OES survey are used for calculating the employment change component of projected job openings. To obtain the replacement need components of projected total and net job openings, estimates of total and net separations based on the OES survey had to be developed. The procedure required total and net separation rates for all detailed occupations based on the OES survey. These rates were developed by identifying the CPS occupation or occupations that are equivalent to the detailed OES-survey-based occupation and by either using the CPS rate directly or calculating a weighted rate using OES or CPS employment figures as weights if the occupation consisted of more than one OES or CPS occupation. Table 8 presents 1994-2005 total and net replacement rates for 1994 OES-based matrix occupations and identifies 1994-2005 annual average total and net replacement needs. Table 8 also identifies OES occupations whose CPS equivalent occupational data was replaced with that of a proxy CPS occupation. Information identifying the proxy occupations is available on request.[4]

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[4] Call the Chief, Division of Occupational Outlook at (202) 606-5705.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Total, all occupations	127,015	16.6	2.1	23.3	22,580	2,680
Executive, administrative, and managerial occupations	12,903	8.3	1.9	20.5	1,160	240
Administrative services managers	279	7.5	1.9	20.9	22	5
Communication, transportation, and utilities operations managers	154	7.5	1.9	20.9	11	3
Construction managers	197	7.5	1.9	20.9	17	4
Education administrators	383	7.8	2.5	28.0	33	10
Engineering, mathematical, and natural science managers	337	7.5	1.9	20.9	29	6
Financial managers	768	6.7	1.7	18.6	58	13
Food service and lodging managers	579	7.5	1.9	20.9	51	11
Funeral directors and morticians[1]	26	7.7	1.9	21.4	2	1
Government chief executives and legislators[1]	91	5.6	2.2	24.6	5	2
Industrial production managers	206	7.5	1.9	20.9	15	4
Marketing, advertising, and public relations managers	461	8.5	1.9	21.0	44	9
Personnel, training, and labor relations managers	206	7.3	2.6	28.4	17	5
Property and real estate managers	261	9.4	1.5	16.9	26	4
Purchasing managers	226	4.3	1.9	20.6	10	4
All other managers and administrators[1]	1,829	7.6	1.9	21.1	149	35
Accountants and auditors	962	10.5	1.8	19.9	107	17
Budget analysts	66	10.7	1.5	16.4	7	1
Claims examiners, property and casualty insurance	58	10.7	0.8	9.0	6	(2)
Construction and building inspectors	64	6.4	1.8	20.3	5	1
Cost estimators	179	10.8	0.9	9.6	21	2
Credit analysts	39	10.7	1.5	16.4	5	1
Employment interviewers, private or public employment service	77	8.8	1.8	20.2	8	1
Inspectors and compliance officers, except construction	157	6.4	1.8	20.3	11	3
Management analysts	231	14.2	1.1	11.8	36	2
Personnel, training, and labor relations specialists	307	8.8	1.8	20.2	30	6
Purchasing agents, except wholesale, retail, and farm products	215	9.1	2.2	24.4	20	5
Tax examiners, collectors, and revenue agents	63	5.8	2.0	22.5	4	1
Underwriters[1]	96	10.4	1.8	19.5	10	2
Wholesale and retail buyers, except farm products	180	12.5	2.5	27.8	22	5
All other management support workers[1]	940	10.2	1.7	18.4	106	16
Professional specialty occupations	17,314	9.4	1.7	19.1	1,881	300
Aeronautical and astronautical engineers[1]	88	6.0	2.1	22.7	3	1
Chemical engineers[1]	50	1.5	2.6	28.1	1	1
Civil engineers, including traffic engineers	184	6.4	2.8	30.3	13	5
Electrical and electronics engineers	349	3.4	2.3	25.3	13	8
Industrial engineers, except safety engineers	115	1.8	2.5	27.5	2	3
Mechanical engineers	231	4.0	2.1	23.2	10	5
Metallurgists and metallurgical, ceramic, and materials engineers[1]	19	4.4	2.6	28.3	1	(2)
Mining engineers, including mine safety engineers[1]	3	4.4	2.6	28.3	(2)	(2)
Nuclear engineers[1]	15	4.4	2.6	28.3	1	(2)
Petroleum engineers[1]	14	4.4	2.6	28.3	1	(2)
All other engineers[1]	292	3.9	1.9	20.8	13	6
Architects and surveyors	200	10.0	2.4	26.4	21	5
Architects, except landscape and marine	91	9.2	2.0	21.9	9	2
Landscape architects	14	9.2	2.0	21.9	1	(2)
Surveyors[1]	96	10.9	2.8	31.3	10	3
Agricultural and food scientists[1]	26	5.6	2.4	26.5	2	1
Biological scientists[1]	82	5.6	2.4	26.5	5	2
Foresters and conservation scientists[1]	41	5.6	2.4	26.5	3	1
Medical scientists[1]	36	5.6	2.4	26.5	2	1

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
All other life scientists[1]	1	5.6	2.4	26.5	(2)	(2)
Actuaries[1]	17	6.2	1.5	16.5	1	(2)
Computer systems analysts, engineers, and scientists	828	6.7	0.7	7.4	80	6
Computer engineers and scientists	345	6.7	0.7	7.4	33	2
Computer engineers	195	6.6	0.7	7.4	19	1
All other computer scientists	149	6.8	0.7	7.4	15	1
Systems analysts	483	6.6	0.7	7.4	47	3
Statisticians[1]	14	6.2	1.5	16.5	1	(2)
Mathematicians and all other mathematical scientists[1]	14	6.2	1.5	16.5	1	(2)
Operations research analysts	44	5.9	2.5	28.0	3	1
Chemists[1]	97	6.4	2.6	26.4	9	2
Geologists, geophysicists, and oceanographers[1]	48	1.9	3.2	34.8	1	1
Meteorologists[1]	7	5.6	2.4	26.5	(2)	(2)
Physicists and astronomers[1]	20	5.6	2.4	26.5	1	(2)
All other physical scientists[1]	40	5.6	2.4	26.5	3	1
Economists	48	16.2	3.5	38.2	10	2
Psychologists	144	4.9	0.7	7.9	8	1
Urban and regional planners[1]	29	10.2	2.0	21.5	3	1
All other social scientists[1]	38	10.2	2.0	21.5	4	1
Clergy	195	5.1	1.8	19.9	11	4
Directors, religious activities and education[1]	81	10.6	1.7	18.8	9	1
Human services workers	168	13.7	2.4	26.6	32	4
Recreation workers[1]	222	10.6	1.7	18.8	26	4
Residential counselors	165	11.9	1.8	19.6	27	3
Social workers	557	9.0	1.7	18.2	59	9
Judges, magistrates, and other judicial workers[1]	79	4.4	1.3	13.8	4	1
Lawyers	656	3.9	1.2	13.0	29	8
Teachers, librarians, and counselors	6,246	12.5	1.9	20.7	883	118
Teachers, preschool and kindergarten	462	12.1	1.5	16.2	64	7
Teachers, elementary	1,419	9.4	1.9	20.5	144	26
Teachers, secondary school	1,340	8.7	2.7	29.6	133	36
Teachers, special education	388	6.2	1.3	14.6	30	5
College and university faculty[1]	823	12.8	2.7	29.8	113	22
Other teachers and instructors	886	22.0	0.7	7.4	225	6
Farm and home management advisors	14	22.0	0.7	7.4	3	(2)
Instructors and coaches, sports and physical training	292	22.0	0.7	7.4	73	2
Adult and vocational education teachers	580	22.0	0.7	7.4	148	4
Instructors, adult (nonvocational) education	290	22.0	0.7	7.4	73	2
Teachers and instructors, vocational education and training	299	22.0	0.7	7.4	75	2
Librarians, archivists, curators, and related workers	168	11.1	2.0	22.3	19	3
Curators, archivists, museum technicians, and restorers[1]	19	9.8	2.4	26.9	2	(2)
Librarians, professional	148	10.3	2.2	24.7	16	3
Counselors	165	11.9	1.8	19.6	23	3
Chiropractors[1]	42	3.1	1.8	19.9	1	1
Dentists[1]	164	2.5	2.5	27.4	4	4
Optometrists[1]	37	3.1	1.8	19.9	1	1
Physicians	539	3.1	1.4	15.7	19	8
Podiatrists[1]	13	3.1	1.8	19.9	(2)	(2)
Veterinarians and veterinary inspectors[1]	56	3.1	1.8	19.9	2	1
Dietitians and nutritionists	53	5.5	2.4	26.8	3	1

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Pharmacists	168	6.2	1.4	15.1	11	2
Physician assistants[1]	56	6.2	1.4	15.1	4	1
Registered nurses	1,906	5.7	1.3	14.0	122	24
Therapists	380	8.2	1.3	14.5	40	5
Occupational therapists[1]	54	8.2	1.3	14.5	6	1
Physical therapists[1]	102	8.2	1.3	14.5	12	1
Recreational therapists[1]	31	8.2	1.3	14.5	3	(2)
Respiratory therapists[1]	73	8.2	1.3	14.5	7	1
Speech-language pathologists and audiologists[1]	85	8.2	1.3	14.5	9	1
All other therapists[1]	35	8.2	1.3	14.5	4	(2)
[illegible]						
Artists and commercial artists[1]	273	13.5	1.8	19.6	41	5
Athletes, coaches, umpires, and related workers[1]	38	18.3	2.6	29.1	8	1
Dancers and choreographers[1]	24	13.7	1.9	21.1	4	(2)
Designers	301	12.9	1.4	15.5	44	4
Designers, except interior designers	238	12.9	1.4	15.5	35	3
Interior designers	63	12.9	1.4	15.5	9	1
Musicians	256	15.3	1.5	17.0	44	4
[illegible]						
Camera operators, television, motion picture, video	18	12.6	1.8	20.0	2	(2)
Photographers	121	12.6	1.8	20.0	17	2
Producers, directors, actors, and entertainers[1]	99	13.7	1.9	21.1	15	2
Public relations specialists and publicity writers	107	13.7	1.9	21.1	16	2
Radio and TV announcers and newscasters[1]	50	3.3	3.7	40.8	2	2
Reporters and correspondents	59	10.9	2.0	22.5	6	1
Writers and editors, including technical writers	272	11.9	1.7	19.0	38	5
All other professional workers[1]	982	12.7	1.9	21.1	125	16
Technicians and related support occupations	4,439	9.2	1.9	20.6	440	83
[illegible]						
Cardiology technologists	14	8.8	1.5	16.5	1	(2)
Clinical laboratory technologists and technicians	274	7.2	1.8	19.4	21	5
Dental hygienists[1]	127	8.8	1.5	16.5	14	2
Electroneurodiagnostic technologists	6	8.8	1.5	16.5	1	(2)
EKG technicians	16	8.8	1.5	16.5	1	(2)
Emergency medical technicians	138	8.8	1.5	16.5	14	2
Licensed practical nurses	702	8.0	1.9	20.5	64	13
Medical records technicians[1]	81	8.8	1.5	16.5	9	1
Nuclear medicine technologists	13	3.8	1.3	14.0	1	(2)
Opticians, dispensing and measuring[1]	63	9.5	2.2	24.1	7	1
Pharmacy technicians	81	8.8	1.5	16.5	8	1
Psychiatric technicians	72	18.5	1.3	14.2	14	1
Radiologic technologists and technicians	167	3.8	1.3	14.0	8	2
Surgical technologists	46	8.8	1.5	16.5	5	1
Veterinary technicians and tehnologists[1]	22	8.3	1.9	20.9	2	(2)
All other health professionals and paraprofessionals[1]	374	8.2	1.6	17.3	35	6
[illegible]						
Engineering technicians	685	9.8	1.9	21.3	70	13
Electrical and electronic technicians and technologists	314	8.4	2.1	23.4	28	7
All other engineering technicians and technologists[1]	371	11.0	1.8	19.6	42	7
Drafters	304	14.9	2.1	23.0	45	6
Science and mathematics technicians[1]	231	8.3	1.9	20.9	20	4
Technicians, except health and engineering and science	1,083	9.5	2.2	24.3	105	23
Aircraft pilots and flight engineers	91	6.4	2.6	28.1	6	2
Air traffic controllers and airplane dispatchers[1]	29	11.4	2.0	22.2	3	1
Broadcast technicians[1]	42	11.4	2.0	22.2	5	1
Computer programmers	537	9.3	2.8	30.4	53	15
Legal assistants and technicians, except clerical	219	9.7	0.9	9.5	25	2
Paralegals	110	11.1	0.8	8.7	16	1
Title examiners and searchers	28	11.1	0.8	8.7	3	(2)
All other legal assistants, including law clerks	80	7.4	1.0	11.0	7	1
Programmers, numerical, tool, and process control[1]	7	11.4	2.0	22.2	1	(2)

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Technical assistants, library	75	11.4	2.0	22.2	10	2
All other technicians[1]	24	11.4	2.0	22.2	3	([2])
Marketing and sales occupations	13,990	22.9	2.7	30.0	3,493	381
[illegible]						
Counter and rental clerks	341	30.3	2.5	27.5	120	9
Insurance sales workers	418	7.8	1.5	16.7	33	6
Marketing and sales worker supervisors	2,293	10.9	1.6	17.8	271	37
Real estate agents, brokers, and appraisers	374	14.8	1.9	21.3	56	7
Brokers, real estate	67	14.8	1.9	21.3	11	1
Real estate appraisers	47	14.8	1.9	21.3	7	1
Sales agents, real estate	260	14.8	1.9	21.3	40	5
Salespersons, retail	3,842	28.9	3.1	33.6	1,169	117
Securities and financial services sales workers	246	11.2	1.3	14.5	32	3
Travel agents	122	26.2	2.0	22.0	36	2
All other sales and related workers[1]	3,349	18.7	2.7	29.3	666	89
Administrative support occupations, including clerical	23,178	18.2	1.9	21.3	4,301	449
[illegible]						
Adjustment clerks	373	15.0	0.7	7.3	67	2
Bill and account collectors	250	20.3	0.8	8.3	60	2
Insurance claims and policy processing occupations	461	15.5	0.9	9.9	74	4
Insurance adjusters, examiners, and investigators	162	10.7	0.8	9.0	19	1
Insurance claims clerks	119	10.7	0.8	9.0	14	1
Insurance policy processing clerks	179	23.0	1.0	11.4	40	2
Welfare eligibility workers and interviewers	104	14.8	1.0	11.2	16	1
All other adjusters and investigators	41	15.9	0.9	9.9	6	([2])
[illegible]						
Telephone operators	310	13.8	2.2	23.9	39	7
Central office operators	48	13.8	2.2	23.9	4	1
Directory assistance operators	33	13.8	2.2	23.9	3	1
Switchboard operators	228	13.8	2.2	23.9	32	5
All other communications equipment operators[1]	9	15.2	2.2	24.7	1	([2])
Computer operators and peripheral equipment operators	289	15.6	2.0	21.6	36	6
Computer operators, except peripheral equipment	259	15.5	2.0	21.6	33	5
Peripheral EDP equipment operators[1]	30	15.9	2.0	21.7	3	1
[illegible]						
Hotel desk clerks[1]	136	32.6	3.8	42.0	49	5
Interviewing clerks, except personnel and social welfare	69	23.8	3.0	33.1	18	2
New accounts clerks, banking	114	23.8	3.0	33.1	27	3
Receptionists and information clerks	1,019	26.1	1.7	18.6	306	17
Reservation and transportation ticket agents and travel clerks	139	26.2	2.0	22.0	36	3
[illegible]						
Mail clerks, except mail machine operators and postal service	127	25.8	2.5	28.0	31	3
Messengers	133	18.1	1.9	21.2	25	3
Postal clerks and mail carriers	474	3.7	2.3	25.0	18	11
Postal mail carriers	320	1.9	2.4	26.5	6	8
Postal service clerks	154	7.3	2.0	21.9	12	3
[illegible]						
Dispatchers	224	10.9	1.3	13.9	26	3
Dispatchers, except police, fire, and ambulance	141	10.9	1.3	13.9	17	2
Dispatchers, police, fire, and ambulance	83	10.9	1.3	13.9	9	1
Meter readers, utilities[1]	57	18.4	2.1	23.1	10	1
Order fillers, wholesale and retail sales	215	16.5	2.0	21.8	37	4
Procurement clerks	57	19.3	2.1	22.8	11	1
Production, planning, and expediting clerks	239	15.7	1.7	18.6	38	4
Stock clerks	1,759	19.3	2.1	22.8	343	37
Traffic, shipping, and receiving clerks	798	19.8	1.4	15.2	161	11
Weighers, measurers, checkers, and samplers, recordkeeping	45	24.2	2.2	24.7	11	1
All other material recording, scheduling, and distribution workers[1]	161	19.4	1.8	19.5	33	3

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
[illegible]						
Advertising clerks[1]	17	16.5	2.0	21.8	3	(2)
Brokerage clerks	73	23.0	1.0	11.4	17	1
Correspondence clerks[1]	29	16.5	2.0	21.8	5	1
File clerks	278	34.1	3.3	36.7	88	9
Financial records processing occupations	2,757	16.4	1.9	20.6	433	52
Billing, cost, and rate clerks[1]	323	20.5	2.6	28.7	67	8
Billing, posting, and calculating machine operators[1]	96	25.9	3.8	41.9	17	4
Bookkeeping, accounting, and auditing clerks	2,181	15.6	1.7	18.3	327	36
Payroll and timekeeping clerks	157	13.3	2.0	22.2	20	3
Library assistants and bookmobile drivers	121	25.9	3.8	41.9	32	5
Order clerks, materials, merchandise, and service	310	16.5	2.0	21.8	53	6
Personnel clerks, except payroll and timekeeping[1]	123	8.5	2.0	22.2	9	2
Statement clerks	25	23.0	1.0	11.4	5	(2)
[illegible]						
Secretaries	3,349	13.8	1.9	21.3	466	65
Legal secretaries	281	13.8	1.9	21.3	43	5
Medical secretaries	226	13.8	1.9	21.3	35	4
Secretaries, except legal and medical	2,842	13.8	1.9	21.3	410	55
Stenographers[1]	105	13.8	1.9	21.3	14	2
Typists and word processors	646	22.3	1.5	16.3	120	10
[illegible]						
Bank tellers	559	22.6	4.0	43.6	109	22
Clerical supervisors and managers[1]	1,340	8.2	2.4	26.3	120	32
Court clerks	51	14.9	0.9	9.6	8	(2)
Credit authorizers, credit checkers, and loan and credit clerks	258	16.9	1.2	13.1	44	3
Credit authorizers	15	14.9	0.8	8.9	3	(2)
Credit checkers	40	15.0	0.7	7.3	6	(2)
Loan and credit clerks	187	17.4	1.3	14.6	33	2
Loan interviewers	16	17.4	1.3	14.6	3	(2)
Customer service representatives, utilities	150	16.5	2.0	21.8	27	3
Data entry keyers, except composing	395	25.3	0.4	4.4	97	2
Data entry keyers, composing	19	25.3	0.4	4.4	3	(2)
Duplicating, mail, and other office machine operators[1]	222	27.4	4.0	44.5	53	9
General office clerks	2,946	21.6	2.4	26.6	650	71
Municipal clerks	22	14.9	0.9	9.6	3	(2)
Proofreaders and copy markers[1]	26	21.0	2.4	25.9	5	1
Real estate clerks	24	21.6	2.4	26.6	5	1
Statistical clerks	75	7.2	1.3	14.5	5	1
Teacher aides and educational assistants	932	28.7	1.1	12.5	320	11
All other clerical and administrative support workers	721	14.9	0.9	9.6	108	6
Service occupations	20,239	26.2	2.3	25.2	5,903	463
[illegible]						
Institutional cleaning supervisors	125	9.4	2.6	28.9	13	3
Janitors and cleaners, including maids and housekeeping cleaners	3,043	23.1	1.7	19.1	768	53
Pest controllers and assistants[1]	56	22.6	1.8	20.1	15	1
All other cleaning and building service workers[1]	226	23.1	1.8	19.4	55	4
[illegible]						
Chefs, cooks, and other kitchen workers	3,237	33.6	1.7	18.6	1,171	55
Cooks, except short order	1,286	27.9	2.2	24.7	388	29
Bakers, bread and pastry	170	27.9	2.2	24.7	56	4
Cooks, institution or cafeteria	412	27.9	2.2	24.7	118	9
Cooks, restaurant	704	27.9	2.2	24.7	214	16
Cooks, short order and fast food	760	27.9	2.2	24.7	227	17
Food preparation workers	1,190	43.3	0.7	7.9	558	9
Food and beverage service occupations	4,514	35.6	3.4	37.8	1,704	155
Bartenders	373	28.7	3.4	37.0	103	13
Dining room and cafeteria attendants and bar helpers	416	31.9	3.4	37.8	133	14
Food counter, fountain, and related workers	1,630	43.9	2.4	26.2	724	39
Hosts and hostesses, restaurant, lounge, or coffee shop	248	24.0	2.6	28.2	65	6
Waiters and waitresses	1,847	32.2	4.5	49.4	671	83

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
All other food preparation and service workers	213	32.4	3.3	36.6	78	7
[illegible]						
Ambulance drivers and attendants, except EMTs	16	16.8	2.6	28.8	4	(2)
Dental assistants	190	16.7	2.8	30.3	33	5
Medical assistants	206	8.8	1.5	16.5	23	3
Nursing aides and psychiatric aides	1,370	18.5	1.3	14.2	290	18
Nursing aides, orderlies, and attendants	1,265	18.5	1.3	14.2	270	16
Psychiatric aides	105	18.5	1.3	14.2	21	1
Occupational therapy assistants and aides	16	11.3	1.8	19.5	3	(2)
Pharmacy assistants	52	11.3	1.8	19.5	7	1
Physical and corrective therapy assistants and aides	78	16.8	2.6	28.8	21	2
All other health service workers	157	16.8	2.6	28.8	36	4
[illegible]						
Amusement and recreation attendants	267	36.0	2.5	27.0	118	7
Baggage porters and bellhops[1]	35	25.5	1.8	20.1	10	1
Barbers[1]	64	6.0	2.8	30.3	4	2
Child care workers	757	34.7	0.9	9.8	308	7
Cosmetologists and related workers	645	13.1	2.3	25.4	91	15
Hairdressers, hairstylists, and cosmetologists	595	13.1	2.3	25.4	83	14
Manicurists	38	13.1	2.3	25.4	7	1
Shampooers	12	13.1	2.3	25.4	2	(2)
Flight attendants	105	6.0	1.7	18.5	7	2
[illegible]						
Home health aides	420	18.5	1.3	14.2	117	5
Personal and home care aides	179	13.7	2.4	26.6	39	4
Ushers, lobby attendants, and ticket takers[1]	59	35.0	2.5	27.0	24	1
Private household workers	803	31.4	2.8	30.4	234	22
Child care workers, private household	288	52.3	4.5	49.2	147	13
Cleaners and servants, private household[1]	486	20.2	1.8	20.2	89	9
Cooks, private household[1]	9	20.2	1.8	20.2	1	(2)
Housekeepers and butlers[1]	20	20.2	1.8	20.2	3	(2)
[illegible]						
Firefighting occupations	284	3.2	4.0	43.7	10	11
Fire fighters	219	3.9	4.1	44.9	9	9
Fire fighting and prevention supervisors[1]	52	0.2	3.6	39.5	(2)	2
Fire inspection occupations[1]	13	4.6	3.8	42.3	1	(2)
Law enforcement occupations	992	4.6	2.6	28.8	53	26
Correction officers	310	8.7	1.0	11.5	34	3
Police and detectives	682	2.8	3.3	36.6	21	23
Police and detective supervisors[1]	87	0.7	4.0	44.5	1	4
Police detectives and investigators	66	2.8	3.6	39.9	2	2
Police patrol officers	400	2.8	3.6	39.9	13	14
Sheriffs and deputy sheriffs[1]	86	2.8	1.8	19.6	3	2
Other law enforcement occupations[1]	43	7.3	1.8	19.5	4	1
[illegible]						
Detectives, except public	55	22.8	1.7	19.1	15	1
Guards	867	22.8	1.7	19.1	245	15
Crossing guards[1]	59	26.3	2.3	25.0	16	1
All other protective service workers	128	41.2	7.0	76.9	53	9
All other service workers[1]	1,020	22.6	2.2	24.0	257	22
Agriculture, forestry, fishing, and related occupations	3,762	18.9	1.9	20.5	669	70
[illegible]						
Animal caretakers, except farm	125	20.0	2.1	22.8	28	3
Farm workers[1]	906	24.5	2.6	29.0	218	24
Gardening, nursery, and greenhouse and lawn service occupations	844	28.6	1.4	15.3	262	12
Gardeners and groundskeepers, except farm	589	30.7	1.2	13.1	183	7
Lawn maintenance workers	96	30.7	1.2	13.1	34	1
Lawn service managers[1]	36	8.6	1.7	18.9	4	1
Nursery and greenhouse managers[1]	19	8.6	1.7	18.9	2	(2)

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Nursery workers[1]	93	24.5	2.6	29.0	23	2
Pruners	28	27.5	2.0	22.0	8	1
Sprayers/applicators	15	30.7	1.2	13.1	5	([2])
Farm operators and managers	1,327	8.4	1.5	16.7	100	20
Farmers[1]	1,276	8.4	1.5	16.5	96	19
Farm managers[1]	51	8.7	1.8	19.3	4	1
[illegible]						
Captains and other officers, fishing vessels[1]	7	4.6	2.0	21.6	([2])	([2])
Fishers, hunters, and trappers[1]	42	4.6	2.0	21.6	2	1
Forestry and logging occupations	124	19.8	2.5	27.3	24	3
Forest and conservation workers[1]	42	20.7	2.6	28.3	9	1
Timber cutting and logging occupations	82	19.0	2.4	26.4	16	2
Fallers and buckers[1]	29	20.7	2.6	28.3	6	1
Logging tractor operators	20	15.1	2.0	22.2	3	([2])
Log handling equipment operators[1]	16	20.7	2.6	28.3	3	([2])
All other timber cutting and related logging workers[1]	17	20.7	2.6	28.3	3	([2])
Supervisors, farming, forestry, and agricultural related occupations[1]	85	9.1	1.8	19.6	8	2
Veterinary assistants	31	20.0	2.1	22.8	7	1
All other agricultural, forestry, fishing, and related workers[1]	255	28.4	2.1	23.2	70	5
Precision production, craft, and repair occupations	14,047	10.8	2.2	23.7	1,565	303
[illegible]						
Construction trades	3,616	13.2	2.1	23.3	468	77
Bricklayers and stone masons[1]	147	16.8	1.7	19.2	25	3
Carpenters[1]	992	15.5	1.9	21.0	160	19
Carpet installers	68	8.5	3.0	32.9	6	2
Ceiling tile installers and acoustical carpenters	16	15.5	1.9	21.0	2	([2])
Concrete and terrazzo finishers	128	1.8	1.9	20.6	2	2
Drywall installers and finishers	133	20.7	2.8	30.8	29	4
Electricians[1]	528	6.0	2.2	23.9	32	11
[illegible]						
Hard tile setters[1]	27	13.5	2.2	24.1	4	1
Highway maintenance workers	167	9.4	2.5	27.9	16	4
Insulation workers	64	30.1	2.9	32.3	21	2
Painters and paperhangers, construction and maintenance[1]	439	13.7	2.1	23.6	65	9
Paving, surfacing, and tamping equipment operators[1]	73	13.5	2.2	24.1	11	2
Pipelayers and pipelaying fitters	57	9.4	2.5	27.9	5	1
Plasterers[1]	30	13.5	2.2	24.1	4	1
Plumbers, pipefitters, and steamfitters[1]	375	12.0	1.9	20.7	46	7
Roofers	128	27.7	1.8	19.7	37	2
Structural and reinforcing metal workers[1]	61	16.5	2.4	26.4	10	1
All other construction trades workers[1]	155	9.9	2.5	27.5	17	4
[illegible]						
Oil and gas extraction occupations	66	15.5	1.7	18.7	10	1
Roustabouts[1]	28	15.5	1.7	18.7	4	([2])
All other oil and gas extraction occupations[1]	38	15.5	1.7	18.7	6	1
Mining, quarrying, and tunneling occupations[1]	18	15.5	1.7	18.7	3	([2])
All other extraction and related workers[1]	136	17.9	1.8	19.3	26	2
[illegible]						
Communications equipment mechanics, installers, and repairers	118	2.5	2.0	21.7	2	2
Central office and PBX installers and repairers	84	0.2	1.9	20.4	([2])	2
Radio mechanics	7	13.5	2.5	27.8	1	([2])
All other communications equipment mechanics, installers, and repairers	27	6.7	2.2	24.0	2	1
[illegible]						
Data processing equipment repairers	75	7.0	2.4	26.4	5	2
Electrical powerline installers and repairers	112	5.8	2.1	23.5	7	2
Electronic home entertainment equipment repairers	34	13.5	2.5	27.8	4	1
Electronics repairers, commercial and industrial equipment	66	13.5	2.5	27.8	9	2
Station installers and repairers, telephone	37	0.2	1.9	20.4	([2])	1
Telephone and cable TV line installers and repairers[1]	191	0.2	2.1	22.6	([2])	4

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
All other electrical and electronic equipment mechanics, installers, and repairers	39	8.5	2.3	25.4	3	1
[illegible]						
Industrial machinery mechanics[1]	464	7.4	2.7	29.2	36	12
Maintenance repairers, general utility	1,273	12.3	2.0	21.7	171	25
Millwrights	77	12.8	2.3	25.4	9	2
[illegible]						
Aircraft mechanics, including engine specialists	119	4.6	2.6	28.3	6	3
Aircraft engine specialists	23	4.6	2.6	28.3	1	1
Aircraft mechanics[1]	96	4.6	2.6	28.3	5	2
Automotive body and related repairers	209	11.3	2.5	27.3	26	5
Automotive mechanics[1]	736	13.4	2.7	30.0	107	20
Bus and truck mechanics and diesel engine specialists	260	6.9	2.1	22.9	19	5
Farm equipment mechanics[1]	41	12.8	2.5	27.6	6	1
Mobile heavy equipment mechanics	101	12.8	2.5	27.6	14	3
Motorcycle, boat, and small engine mechanics	46	11.6	2.5	27.7	5	1
Motorcycle repairers[1]	11	11.6	2.5	27.7	1	(2)
Small engine specialists[1]	35	11.6	2.5	27.7	4	1
[illegible]						
Bicycle repairers	40	12.3	2.0	21.7	5	1
Camera and photographic equipment repairers[1]	11	9.2	2.4	26.2	1	(2)
Coin and vending machine servicers and repairers	19	12.3	2.0	21.7	2	(2)
Electric meter installers and repairers[1]	12	9.2	2.4	26.2	1	(2)
Electromedical and biomedical equipment repairers	10	12.3	2.0	21.7	1	(2)
Elevator installers and repairers[1]	24	9.2	2.4	26.2	2	1
Heat, air conditioning, and refrigeration mechanics and installers	233	6.2	2.3	25.0	17	5
[illegible]						
Locksmiths and safe repairers[1]	20	9.2	2.4	26.2	2	(2)
Musical instrument repairers and tuners[1]	10	9.2	2.4	26.2	1	(2)
Office machine and cash register servicers[1]	59	1.5	3.9	43.1	1	2
Precision instrument repairers[1]	40	9.2	2.4	26.2	4	1
Riggers	11	12.3	2.0	21.7	1	(2)
Tire repairers and changers	89	38.4	3.6	40.0	35	3
Watchmakers[1]	6	9.2	2.4	26.2	1	(2)
All other mechanics, installers, and repairers[1]	371	7.7	1.8	20.1	30	7
[illegible]						
Assemblers, precision	324	12.3	2.1	22.8	39	7
Aircraft assemblers, precision[1]	20	7.9	1.8	19.7	2	(2)
Electrical and electronic equipment assemblers, precision	144	15.4	2.3	24.8	21	3
Electromechanical equipment assemblers, precision	47	15.4	2.3	24.8	7	1
Fitters, structural metal, precision[1]	14	7.9	1.8	19.7	1	(2)
Machine builders and other precision machine assemblers[1]	58	7.9	1.8	19.7	5	1
All other precision assemblers[1]	40	8.1	1.8	20.0	4	1
[illegible]						
Bakers, manufacturing	36	17.8	2.0	22.2	7	1
Butchers and meatcutters	219	15.8	2.4	26.3	33	5
All other precision food and tobacco workers[1]	38	15.8	2.4	25.9	6	1
Inspectors, testers, and graders, precision[1]	654	13.6	1.9	21.0	87	13
Metal workers, precision	865	9.1	1.9	21.2	78	17
Boilermakers[1]	20	7.9	1.8	19.7	2	(2)
Jewelers and silversmiths[1]	30	7.9	1.8	19.7	2	1
Machinists[1]	369	7.4	1.9	21.4	26	7
Sheet metal workers and duct installers[1]	222	16.6	1.8	20.3	35	4
Shipfitters[1]	12	7.9	1.8	19.7	1	(2)
Tool and die makers[1]	142	3.4	2.2	23.8	5	3
All other precision metal workers[1]	90	7.8	1.8	20.0	7	2
[illegible]						
Bookbinders[1]	6	14.8	1.9	21.4	1	(2)
Prepress printing workers, precision	131	11.3	1.8	19.5	15	2
Compositors and typesetters, precision[1]	11	10.8	1.8	20.1	1	(2)

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Job printers[1]	14	9.1	2.0	21.6	1	(2)
Paste-up workers[1]	22	10.8	1.8	20.1	2	(2)
Electronic pagination systems workers[1]	18	10.8	1.8	20.1	3	(2)
Photoengravers[1]	7	12.2	1.7	18.6	1	(2)
Camera operators[1]	16	12.2	1.7	18.6	2	(2)
Strippers, printing[1]	31	12.2	1.7	18.6	4	1
Platemakers[1]	13	12.2	1.7	18.6	2	(2)
All other printing workers, precision[1]	13	12.2	1.7	18.6	2	(2)
[illegible]						
Custom tailors and sewers[1]	64	9.7	1.1	11.7	7	1
Patternmakers and layout workers, fabric and apparel[1]	17	10.9	0.9	10.4	2	(2)
Shoe and leather workers and repairers, precision[1]	24	10.9	0.9	10.4	2	(2)
Upholsterers[1]	63	8.3	1.2	13.7	5	1
All other precision textile, apparel, and furnishings workers[1]	51	19.5	2.0	21.9	10	1
Woodworkers, precision	241	6.8	1.9	20.8	17	5
Cabinetmakers and bench carpenters[1]	131	2.7	1.8	19.3	4	2
Furniture finishers[1]	38	18.6	2.2	24.3	7	1
Wood machinists[1]	50	2.7	1.8	19.3	1	1
All other precision woodworkers[1]	22	18.6	2.2	24.3	4	(2)
[illegible]						
Dental laboratory technicians, precision[1]	49	8.5	1.9	21.4	4	1
Optical goods workers, precision[1]	19	9.5	2.2	24.1	2	(2)
Photographic process workers, precision	14	17.6	2.9	31.6	3	(2)
All other precision workers[1]	117	14.1	2.0	22.3	17	2
[illegible]						
Chemical plant and system operators[1]	37	4.6	2.0	21.8	2	1
Electric power generating plant operators, distributors, and dispatchers	43	4.6	2.0	21.8	2	1
Power distributors and dispatchers	18	4.6	2.0	21.8	1	(2)
Power generating and reactor plant operators	26	4.6	2.0	21.8	1	1
Gas and petroleum plant and system occupations[1]	31	4.6	2.0	21.8	1	1
Stationary engineers	30	3.1	2.1	22.9	1	1
Water and liquid waste treatment plant and system operators[1]	95	4.6	2.0	21.8	5	2
All other plant and system operators[1]	93	4.6	2.0	21.8	4	2
Operators, fabricators, and laborers	17,142	17.9	2.3	25.7	3,128	400
[illegible]						
Numerical control machine tool operators and tenders, metal and plastic[1]	75	13.0	1.8	19.3	11	1
Combination machine tool setters, set-up operators, operators, and tenders[1]	106	13.0	1.8	19.3	15	2
Machine tool cut and form setters, operators, and tenders, metal and plastic	709	11.5	2.2	24.6	75	16
Drilling and boring machine tool setters and set-up operators, metal and plastic[1]	45	13.0	1.8	19.3	5	1
Grinding machine setters and set-up operators, metal and plastic	64	15.3	1.9	20.5	9	1
Lathe and turning machine tool setters and set-up operators, metal and plastic[1]	71	13.0	1.8	19.3	8	1
Machine forming operators and tenders, metal and plastic	171	8.2	3.1	34.0	13	5
Machine tool cutting operators and tenders, metal and plastic	119	12.9	1.8	19.6	13	2
Punching machine setters and set-up operators, metal and plastic	48	11.7	2.2	24.7	5	1
All other machine tool cutting and forming operatives[1]	191	11.5	2.2	24.0	22	4
[illegible]						
Metal fabricators, structural metal products[1]	44	13.0	1.8	19.3	6	1
Soldering and brazing machine operators and tenders[1]	10	15.4	2.6	28.4	1	(2)
Welding machine setters, operators, and tenders	103	11.4	2.5	27.1	11	3
[illegible]						
Electrolytic plating machine operators and tenders, setters and set-up operators, metal and plastic[1]	42	14.5	2.4	26.3	6	1
Foundry mold assembly and shakeout workers	10	8.2	3.1	34.0	1	(2)
Furnace operators and tenders	20	9.3	1.6	17.4	2	(2)
Heat treating machine operators and tenders, metal and plastic[1]	20	14.5	2.4	26.3	3	(2)
Metal molding machine operators and tenders, setters and set-up operators	40	8.2	3.1	34.0	3	1
Plastic molding machine operators and tenders, setters and set-up operators	165	8.2	3.1	34.0	14	5
All other metal and plastic machine setters, operators, and related workers[1]	127	14.5	2.4	26.3	19	3

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
[illegible]						
Bindery machine operators and set-up operators[1]	72	12.2	1.7	18.6	9	1
Prepress printing workers, production	25	11.1	1.8	19.8	2	(2)
Photoengraving and lithographic machine operators and tenders[1]	5	12.2	1.7	18.6	(2)	(2)
Typesetting and composing machine operators and tenders[1]	20	10.8	1.8	20.1	1	(2)
Printing press operators	219	8.7	2.0	21.9	19	4
Letterpress operators	14	8.7	2.0	21.9	1	(2)
Offset lithographic press operators	79	8.7	2.0	21.9	7	2
Printing press machine setters, operators and tenders	113	8.7	2.0	21.9	10	2
All other printing press setters and set-up operators	13	8.7	2.0	21.9	1	(2)
[illegible]						
All other printing, binding, and related workers[1]	43	11.2	1.8	19.5	5	1
[illegible]						
Extruding and forming machine operators and tenders, synthetic or glass fibers	22	9.7	2.1	22.9	2	(2)
Pressing machine operators and tenders, textile, garment, and related materials	77	25.0	2.2	24.2	19	2
Sewing machine operators, garment	531	20.2	1.8	20.1	83	10
Sewing machine operators, non-garment	129	20.2	1.8	20.1	25	2
Textile bleaching and dyeing machine operators and tenders	30	9.7	2.1	22.9	3	1
Textile draw-out and winding machine operators and tenders[1]	180	17.3	1.8	19.9	29	3
Textile machine setters and set-up operators[1]	39	17.8	1.8	19.7	7	1
[illegible]						
Head sawyers and sawing machine operators and tenders, setters and set-up operators[1]	62	15.0	2.4	26.0	8	1
Woodworking machine operators and tenders, setters and set-up operators[1]	64	16.0	2.2	24.2	10	1
[illegible]						
Boiler operators and tenders, low pressure	18	3.1	2.1	22.9	(2)	(2)
Cement and gluing machine operators and tenders[1]	36	16.0	2.4	26.3	5	1
Chemical equipment controllers, operators and tenders	75	13.6	3.4	37.9	10	3
Cooking and roasting machine operators and tenders, food and tobacco[1]	28	13.2	2.3	25.6	4	1
Crushing and mixing machine operators and tenders	137	16.1	2.4	26.2	22	3
Cutting and slicing machine setters, operators and tenders	92	12.0	1.8	19.6	12	2
Dairy processing equipment operators, including setters	14	13.6	3.4	37.9	2	(2)
Electronic semiconductor processors	33	11.0	2.3	25.3	4	1
Extruding and forming machine setters, operators and tenders[1]	102	16.0	2.4	26.3	16	2
Furnace, kiln, or kettle operators and tenders	28	9.3	1.6	17.4	2	(2)
Laundry and drycleaning machine operators and tenders, except pressing	175	15.4	2.3	25.5	29	4
Motion picture projectionists[1]	8	16.0	2.4	26.3	1	(2)
Packaging and filling machine operators and tenders	329	20.9	2.5	27.0	72	8
[illegible]						
Coating, painting, and spraying machine operators, tenders, setters, and set-up operators	111	14.3	2.5	27.6	16	3
Painters, transportation equipment	45	14.3	2.5	27.6	7	1
Paper goods machine setters and set-up operators[1]	51	16.0	2.4	26.3	7	1
Photographic processing machine operators and tenders	43	11.0	2.3	25.3	5	1
Separating and still machine operators and tenders	20	13.6	3.4	37.9	3	1
Shoe sewing machine operators and tenders	14	21.8	1.5	16.2	2	(2)
Tire building machine operators	14	11.0	2.3	25.3	1	(2)
All other machine operators, tenders, setters, and set-up operators[1]	407	13.5	2.4	26.6	55	10
[illegible]						
Cannery workers	73	20.9	2.5	27.0	16	2
Coil winders, tapers, and finishers	21	16.8	2.2	24.6	3	(2)
Cutters and trimmers, hand[1]	51	15.4	2.6	28.4	7	1
Electrical and electronic assemblers	212	16.8	2.2	24.6	33	5
Grinders and polishers, hand[1]	74	15.4	2.6	28.4	11	2
Machine assemblers	51	16.8	2.2	24.6	9	1
Meat, poultry, and fish cutters and trimmers, hand[1]	132	15.4	2.6	28.4	23	3
Painting, coating, and decorating workers, hand[1]	33	15.4	2.6	28.4	5	1
Pressers, hand[1]	16	15.4	2.6	28.4	2	(2)
Sewers, hand[1]	19	9.7	1.1	11.7	2	(2)

See footnotes at end of table.

TABLE 8. Total and net replacement rates and annual average replacement needs, 1994-2005 — Continued

(Numbers in thousands)

1994 Matrix occupation	Total employment, 1994	Replacement rate (Percent)			Annual average replacement needs, 1994-2005	
		Total, 1990-91	Net, 1994-2005		Total	Net
			Annual average	11-year		
Solderers and brazers[1]	27	15.4	2.6	28.4	4	1
Welders and cutters	314	11.4	2.5	27.1	36	8
All other assemblers, fabricators, and hand workers[1]	1,583	16.4	2.3	25.7	263	37
Motor vehicle operators	3,620	17.3	1.5	16.2	505	58
Bus drivers	568	16.4	1.6	17.3	101	9
Bus drivers, except school	165	16.4	1.6	17.3	29	3
Bus drivers, school	404	16.4	1.6	17.3	72	6
Taxi drivers and chauffeurs	129	21.9	1.0	11.2	31	1
Truck drivers	2,897	12.1	1.6	18.1	369	48
Driver/sales workers	331	13.6	2.6	28.3	47	9
Truck drivers light and heavy	2,566	11.9	1.5	16.8	322	39
All other motor vehicle operators[1]	26	15.9	1.7	18.9	4	([2])
Locomotive engineers[1]	22	3.4	1.3	14.8	1	([2])
Railroad brake, signal, and switch operators[1]	19	3.4	1.3	14.8	1	([2])
Railroad conductors and yardmasters[1]	26	3.4	1.3	14.8	1	([2])
Rail yard engineers, dinkey operators, and hostlers[1]	6	3.4	1.3	14.8	([2])	([2])
Subway and streetcar operators[1]	12	3.4	1.3	14.8	([2])	([2])
Able seamen, ordinary seamen, and marine oilers[1]	20	8.3	1.8	19.9	2	([2])
Captains and pilots, ship[1]	13	8.3	1.8	19.9	1	([2])
Mates, ship, boat, and barge[1]	7	8.3	1.8	19.9	1	([2])
Ship engineers[1]	8	8.3	1.8	19.9	1	([2])
Crane and tower operators	45	14.3	2.2	24.1	6	1
Excavation and loading machine operators	88	3.8	2.0	21.9	4	2
Grader, dozer, and scraper operators	106	9.6	1.8	19.6	11	2
Hoist and winch operators[1]	9	7.6	1.8	20.1	1	([2])
Industrial truck and tractor operators	464	15.1	2.0	22.2	72	9
Operating engineers	146	7.6	1.8	20.1	11	3
All other material moving equipment operators[1]	201	6.6	1.9	20.4	14	4
All other transportation and material moving equipment operators[1]	145	13.6	1.7	19.2	21	3
Freight, stock, and material movers, hand[1]	765	31.1	3.6	40.1	232	28
Hand packers and packagers	942	25.1	2.6	28.5	257	24
Helpers, construction trades[1]	513	24.1	3.1	33.6	132	16
Machine feeders and offbearers	262	11.5	2.8	30.6	29	7
Parking lot attendants[1]	64	15.9	1.7	18.9	11	1
Refuse collectors	111	13.0	2.2	24.3	15	2
Service station attendants	167	[illegible]	3.6	40.0	61	6
Vehicle washers and equipment cleaners	249	38.3	3.1	33.7	99	8
All other helpers, laborers, and material movers, hand[1]	1,727	30.4	3.3	36.0	564	58

[1] One or more Current Population Survey (CPS) proxy occupations are used to estimate CPS based data.

[2] Less than 500

Appendix. Sources of State and Local Job Outlook Information

State and local job market and career information is available from State employment security agencies and State Occupational Information Coordinating Committees (SOICC's). State employment security agencies develop detailed information about local labor markets, such as current and projected employment by occupation and industry, characteristics of the work force, and changes in State and local area economic activity. State Occupational Information Coordinating Committees may provide the information directly, or refer you to other sources. Addresses and telephone numbers of State employment security agency directors of research and SOICC directors are listed below.

Most States have career information delivery systems (CIDS). Look for these systems in secondary schools, postsecondary institutions, libraries, job training sites, vocational rehabilitation centers, and employment service offices. Jobseekers can use the systems' computers, printed material, microfiche, and toll-free hotlines to obtain information on occupations, educational opportunities, student financial aid, apprenticeships, and military careers. Ask counselors and SOICC's for specific locations.

A computerized State Training Inventory (STI) developed by the National Occupational Information Coordinating Committee (NOICC) is also maintained by the SOICC's and available in every State. Education and training data are organized by occupation or training program title, type of institution, and geographic area. The database is compiled at the State level and includes more than 215,000 education and training programs offered by over 17,000 schools, colleges, and hospitals. If you are interested in STI, contact individual SOICC's for State-specific data.

Alabama
Director, Labor Market Information, Alabama Department of Industrial Relations, 649 Monroe St., Room 422, Montgomery, AL 36130. Phone: (205) 242-8855.

Director, Alabama Occupational Information Coordinating Committee, Room 424, 401 Adams Ave., P.O. Box 5690, Montgomery, AL 36103-5690. Phone: (334) 242-2990.

Alaska
Chief, Research and Analysis, Alaska Department of Labor, P.O. Box 25501, Juneau, AK 99802-5501. Phone: (907) 465-6022.

Executive Director, Alaska Department of Labor, Research and Analysis, P.O. Box 25501, Juneau, AK 99802-5501. Phone: (907) 465-4518.

American Samoa
Statistical Analyst, Research and Statistics, Office of Manpower Resources, American Samoa Government, Pago Pago, AS 96799. Phone: (684) 633-5172.

Director, Occupational Information Coordinating Council, Department of Human Resources, American Samoa Government, Pago Pago, AS 96799. Phone: (684) 633-4485.

Arizona
Research Administrator, Department of Economic Security, P.O. Box 6123, Site Code 733A, Phoenix, AZ 85005. Phone: (602) 542-3871.

Executive Director, Occupational Information Coordinating Council, P.O. Box 6123, Site Code 733A, 1789 West Jefferson St., First Floor, Phoenix, AZ 85005-6123. Phone: (602) 542-3871.

Arkansas
Chief, Arkansas Employment Security Department, P.O. Box 2981, Little Rock, AR 72203. Phone: (501) 682-3159.

Executive Director, Occupational Information Coordinating Council, Arkansas Employment Security Division, Employment and Training Services, P.O. Box 2981, Little Rock, AR 72203-2981. Phone: (501) 682-3159.

California
Chief, Labor Market Information Division, Employment Development Department, 700 Franklin Blvd., Suite 1100, Sacramento, CA 94280-0001. Phone: (916) 262-2160.

Executive Director, Occupational Information Coordinating Council, 1116 9th St. Lower Level, P.O. Box 944222, Sacramento, CA 94244-2220. Phone: (916) 323-6544.

Colorado
Director, Colorado Department of Labor, Tower 2, Suite 400, 1515 Arapahoe St., Denver, CO 80202-2117. Phone: (303) 620-4977.

Director, Occupational Information Coordinating Council, State Board Community College, 1391 Speer Blvd., Suite 600, Denver, CO 80204-2554. Phone: (303) 866-4488.

Connecticut
Director of Research, State Labor Department, 200 Folly Brook Blvd., Wethersfield, CT 06109. Phone: (203) 566-2120.

Executive Director, Occupational Information Coordinating Council, Connecticut Department of Education, 25 Industrial Park Rd., Middletown, CT 06457-1543. Phone: (203) 638-4042.

Delaware
Chief, Delaware Department of Labor, University Plaza, Building D, P.O. Box 9029, Newark, DE 19714. Phone: (302) 368-6962.

Executive Director, Office of Occupational and Labor Market Information, University Office Plaza, P.O. Box 9029, Newark, DE 19714-9029. Phone: (302) 368-6963.

District of Columbia
Chief, Labor Market Information, District of Columbia Department of Employment Services, 500 C St. NW., Room 201, Washington, DC 20001. Phone: (202) 724-7214.

Executive Director, Occupational Information Coordinating Council, Department of Employment Services, 500 C St. NW., Room 215, Washington, DC 20001-2187. Phone: (202) 724-7237.

Florida
Chief, Florida Department of Labor and Employment Security, 2012 Capitol Circle SE., Room 200 Hartman Bldg., Tallahassee, FL 32399-0674. Phone: (904) 488-1048.

Manager, Bureau of Labor Market Information/Department of Labor and Employment Security, 2012 Capitol Circle SE., Hartman Bldg., Suite 200, Tallahassee, FL 32399-0673. Phone: (904) 488-1048.

Georgia
Director, Labor Information Systems, Georgia Department of Labor, 223 Courtlnad St. NE., Atlanta, GA 30303-1751. Phone: (404) 656-3177.

Executive Director, Occupational Information Coordinating Council, Department of Labor, 148 International Blvd., Sussex Place, Atlanta, GA 30303-1751. Phone: (404) 656-9639.

Guam
Administrator, Department of Labor, Bureau of Labor Statistics, Government of Guam, P.O. Box 9970, Tamuning, GU 96911-9970.

Executive Director, Human Resource Development Agency, Jay Ease Bldg., Third Floor, P.O. Box 2817, Agana, GU 96910-2817. Phone: (671) 646-9341.

Hawaii
Chief, Department of Labor and Industrial Relations, 830 Punchbowl St., Rm 304, Honolulu, HI 96813. Phone: (808) 586-8999.

Executive Director, Occupational Information Coordinating Council, 830 Punchbowl St., Room 315, Honolulu, HI 96813-5080. Phone: (808) 586-8750.

Idaho
Chief, Research and Analysis, Idaho Department of Employment, 317 Main St., Boise, ID 83735. Phone: (208) 334-6169.

Director, Occupational Information Coordinating Council, Len B. Jordan Bldg., Room 301, 650 West State St., P.O. Box 83720, Boise, ID 83720-0095. Phone: (208) 334-3705.

Illinois
Director, Illinois Department of Employment Security, 401 South State St., Suite 215, Chicago, IL 60605. Phone: (312) 793-2316.

Executive Director, Occupational Information Coordinating Council, 217 East Monroe, Suite 203, Springfield, IL 62706-1147. Phone: (217) 785-0789.

Indiana
Director, Labor Market Information, Department of Employment and Training Services, 10 North Senate Ave., Indianapolis, IN 46204. Phone: (317) 232-7460.

Executive Director, Department of Workforce Development State Occupational Information Coordinating Committee, Indiana Government Center South, 10 North Senate Ave., Room SE 205, Indianapolis, IN 46204-2277. Phone: (317) 232-8528.

Iowa
Chief, Iowa Department of Employment Services, 1000 East Grand Ave., Des Moines, IA 50319. Phone: (515) 281-8181.

Acting Executive Director, Occupational Information Coordinating Council, Iowa Department of Economic Development, 200 East Grand Ave., Des Moines, IA 50309-1747. Phone: (515) 242-4889.

Kansas
Chief, Labor Market Information, Kansas Department of Human Resources, 401Topeka Blvd., Topeka, KS 66603-3182. Phone: (913) 296-5058.

Director, State Occupational Information Coordinating Committee, 401 Topeka Ave., Topeka, KS 66603-3182. Phone: (913) 296-2387.

Kentucky
Director, Labor Market Research and Analysis, Department of Employment Services, 275 East Main St., Frankfort, KY 40621. Phone: (502) 564-7976.

Information Liaison/Manager, Occupational Information Coordinating Council, 2031 Capital Plaza Tower, Frankfort, KY 40601. Phone: (502) 564-4258.

Louisiana
Director, Research and Statistics Division, Department of Employment and Training, P.O. Box 94094, Baton Rouge, LA 70804-9094. Phone: (504) 342-3141.

Acting Director, Louisiana Occupational Information Coordinating Committee, 1001 North 23rd, Baton Rouge, LA 70802. Phone: (504) 342-5149.

Maine
Director, Economic Analysis and Research, Maine Department of Labor, P.O. Box 309, Augusta, ME 04330-0309. Phone: (207) 287-2271.

Acting Executive Director, Maine Occupational Information Coordinating Committee, State House Station 71, Augusta, ME 04333. Phone: (207) 624-6200.

Maryland
Director, Office of Labor Market Analysis and Information, Department of Labor, Licensing, and Regulations, 1100 North Eutaw St., Room 601, Baltimore, MD 21201. Phone: (410) 767-2250.

Director, Occupational Information Coordinating Council, State Department of Employment and Training, 1100 North Eutaw St., Room 103, Baltimore, MD 21201-2298. Phone: (410) 767-2951.

Massachusetts
Director of Research, Division of Employment Security, 19 Staniford St., 2nd Floor, Boston, MA 02114. Phone: (617) 626-6556.

Director, Occupational Information Coordinating Council, Massachusetts Division of Employment Security, Charles F. Hurley Bldg., 2nd Floor, Government Center, Boston, MA 02114. Phone: (617) 727-5718.

Michigan
Director, Bureau of Research and Statistics, Michigan Employment Security Commission, 7310 Woodward Ave., Room 510, Detroit, MI 48202. Phone: (313) 876-5904.

Executive Coordinator, Michigan Occupational Information Coordinating Committee, Victor Office Center, Third Floor, 201 North Washington Square, Box 30015, Lansing, MI 48909-7515. Phone: (517) 373-0363.

Minnesota
Director, Research and Statistical Services, Minnesota Department of Economic Security, 390 North Robert St., 5th Floor, St. Paul, MN 55101. Phone: (612) 296-6546.

Director, Occupational Information Coordinating Council, Department of Jobs and Training, 390 North Robert Street., St. Paul, MN 55101. Phone: (612) 296-2072.

Mississippi
Chief, Labor Market Information Department, Mississippi Employment Security Commission, P.O. Box 1699, Jackson, MS 39215-1699. Phone: (601) 961-7424.

Director, Department of Economic and Community Development, Labor Assistance Division/ State Occupational Information Coordinating Committee Office, 301 West Pearl St., Jackson, MS 39203-3089. Phone: (601) 949-2240.

Missouri
Chief, Research and Analysis,Division of Employment Security, 421 East Dunkin St., P.O. Box 59, Jefferson City, MO 65104-0059. Phone: (314) 751-3591.

Director, Missouri Occupational Information Coordinating Committee, 400 Dix Rd., Jefferson City, MO 65109. Phone: (314) 751-3800.

Montana
Chief, Research and Analysis, Department of Labor and Industry, P.O. Box 1728, Helena, MT 59624. Phone: (406) 444-2430.

Program Manager, Montana Occupational Information Coordinating Committee, P.O. Box 1728, 1327 Lockey St., Second Floor, Helena, MT 59624-1728. Phone: (406) 444-2741.

Nebraska
Research Administrator, Labor Market Information, Nebraska Department of Labor, 550 South 16th St., P.O. Box 94600, Lincoln, NE 68509. Phone: (402) 471-2600.

Administrator, Nebraska Occupational Information Coordinating Committee, P.O. Box 94600, 550 South 16th St., Lincoln, NE 68509-4600. Phone: (402) 471-9953.

Nevada
Chief, Research and Analysis/LMI, Nevada Employment Security Division, 500 East 3rd St., Carson City, NV 89713-0001. Phone: (702) 687-4550.

Director, Nevada Occupational Information Coordinating Committee, 500 East 3rd St., Carson City, NV 89713. Phone: (702) 687-4550.

New Hampshire
Director, Labor Market Information, New Hampshire Department of Employment Security, 32 South Main St., Concord, NH 03301. Phone: (603) 228-4123.

Director, New Hampshire State Occupational Information Coordinating Committee, 64B Old Suncook Rd., Concord, NH 03301. Phone: (603) 228-3349.

New Jersey
Director, Labor Market and Demographic Research, New Jersey Department of Labor, CN383, Trenton, NJ 08625. Phone: (609) 292-0089.

Staff Director, New Jersey Occupational Information Coordinating Committee, Room 609, Labor and Industry Bldg., CN056, Trenton, NJ 08625-0056. Phone: (609) 292-2682.

New Mexico
Chief, Economic Research and Analysis Bureau, New Mexico Department of Labor, P.O. Box 1928, Albuquerque, NM 87103. Phone: (505) 841-8645.

Director, New Mexico Occupational Information Coordinating Committee, 401 Broadway NE., Tiwa Bldg., P.O. Box 1928, Albuquerque, NM 87103-1928. Phone: (505) 841-8455.

New York
Director, Division of Research and Statistics, New York State Department of Labor, State Office Building Campus, Bldg. 12, Room 402, Albany, NY 12240. Phone: (518) 457-6369.

Executive Director, New York Occupational Information Coordinating Committee, Research and Statistics Division, State Campus, Bldg. 12, Room 400, Albany, NY 12240. Phone: (518) 457-6182.

North Carolina
Director, Labor Market Information, Employment Security Commission of North Carolina, P.O. Box 25903, Raleigh, NC 27611. Phone: (919) 733-2936.

Executive Director, North Carolina Occupational Information Coordinating Committee, 700 Wade Avenue, P.O. Box 25903, Raleigh, NC 27611. Phone: (919) 733-6700.

North Dakota
Director, Research and Statistics, Job Service of North Dakota, P.O. Box 5507, Bismarck, ND 58502-5507. Phone: (701) 328-2860.

Coordinator, North Dakota State Occupational Information Coordinating Committee, 1720 Burnt Boat Dr., P.O. Box 1537, Bismarck, ND 58502-1537. Phone: (701) 328-2733.

Northern Mariana Islands
Executive Director, Northern Mariana Islands Occupational Information Coordinating Committee, P.O. Box 149, Saipan, CM 96950-0149. Phone: (670) 234-7394.

Ohio
Administrator, Labor Market Information Division, Ohio Bureau of Employment Services, 78-80 Chestnut, Columbus, OH 43215. Phone: (614) 752-9494.

Director, Ohio Occupational Information Coordinating Committee, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43266-0018. Phone: (614) 466-1109.

Oklahoma
Director, Research Division, Oklahoma Employment Security Commission, 305 Will Rogers Memorial Office Bldg., Oklahoma City, OK 73105. Phone: (405) 557-7265.

Executive Director, Occupational Information Coordinating Council, Department of Voc/Tech Education, 1500 W. 7th Ave., Stillwater, OK 74074-4364. Phone: (405) 743-5198.

Oregon

Administrator for Research, Tax and Analysis, Employment Department, 875 Union St. NE., Salem, OR 97311. Phone: (503) 378-5490.

Acting Director, Oregon Occupational Information Coordinating Committee, 875 Union St. NE., Salem, OR 97311-0101. Phone: (503) 378-5490.

Pennsylvania

Director, Bureau of Research and Statistics, Department of Labor and Industry, 300 Captiol Associates Building, 3rd Floor, Harrisburg, PA 17120-9969. Phone: (717) 787-3266.

Director, Pennsylvania Department of Labor and Industry, 1224 Labor and Industry Bldg., 7th and Foster, Harrisburg, PA 17120-0019. Phone: (717) 787-8646.

Puerto Rico

Director, Research and Statistics Division, Department of Labor and Human Resources, 505 Munoz Rivera Ave., 20th Floor, Hato Rey, PR 00918. Phone: (809) 754-5385.

Director, Puerto Rico Occupational Information Coordinating Committee, P.O. Box 366212, San Juan, PR 00936-6212. Phone: (809) 723-7110.

Rhode Island

Administrator, Labor Market Information, Rhode Island Department of Employment and Training, 101 Friendship St., Providence, RI 02903. Phone: (401) 277-2731.

Director, Rhode Island Occupational Information Coordinating Committee, 22 Hayes St., Room 133, Providence, RI 02908-5092. Phone: (401) 272-0830.

South Carolina

Director, Labor Market Information, South Carolina Employment Security Commission, P.O. Box 995, Columbia, SC 29202. Phone: (803) 737-2660.

Director, South Carolina Occupational Information Coordinating Committee, 1550 Gadsden St., P.O. Box 995, Columbia, SC 29202-0995. Phone: (803) 737-2733.

South Dakota

Director, Labor Information Center, South Dakota Department of Labor, 400 S. Roosvelt, P.O. Box 4730, Aberdeen, SD 57402-4730. Phone: (605) 626-2314.

Director, Occupational Information Coordinating Council, South Dakota Department of Labor, 420 South Roosevelt St., P.O. Box 4730, Aberdeen, SD 57402-4730. Phone: (605) 626-2314.

Tennessee

Director, Research and Statistics Division, Tennessee Department of Employment Security, 500 James Robertson Pkwy., 11th Floor-Volunteer Plaza, Nashville, TN 37245-1000. Phone: (615) 741-2284.

Executive Director, Tennessee Occupational Information Coordinating Committee, 500 James Robertson Pkwy., 11th Floor-Volunteer Plaza, Nashville, TN 37219-1215. Phone: (615) 741-6451.

Texas

Director, Economic Research and Analysis, Texas Employment Commission, 15th & Congress Ave., Room 208T, Austin, TX 78778. Phone: (512) 463-2616.

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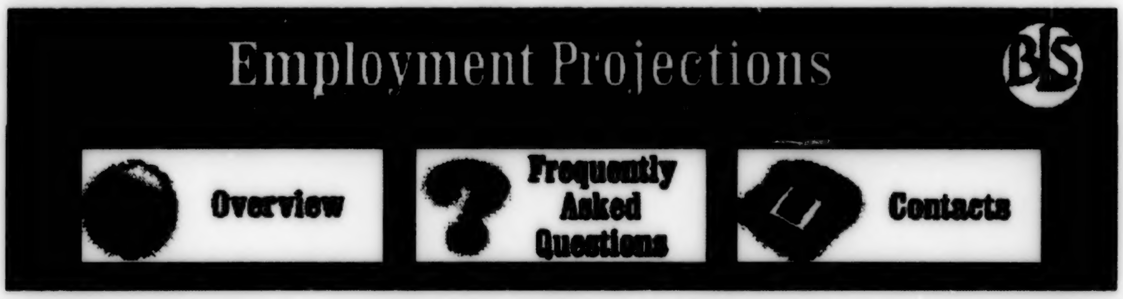
BLS Employment Outlook Information on the Internet

To learn about the latest employment outlook information from the Bureau of Labor Statistics Office of Employment Projections, access our Internet Web site (**http://stats.bls.gov/emphome.htm**) and then click on one of the following logos:



Under subheading *Overview*:

- Most requested tables
- Publications about employment projections
- Access to data about employment projections
- News releases

Under subheading *FAQ's*:

- How often are the projections updated and where are they published?
- What are the fastest growing jobs?
- What are the fastest growing industries?
- Do you have projections for States and local areas?

Under subheading *Contacts*:

Telephone contacts for data users:

- Industry Employment Projections
- Occupational Employment Projections
- Occupational Outlook
- Data tapes and diskettes

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